University of Alberta

Feminism and Formal Logic

by

Marianne LeNabat

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ABSTRACT

Feminist scholars have made inroads into many areas previously thought to be beyond the reach of value-based critique. But most logicians would object in principle to the idea that *logic* could be criticized on feminist grounds. And yet a closer examination of the discipline reveals that it is a theorizing activity rife with controversy, and that feminist concerns with logic can be seen as continuous with other debates about the viability of the current system. Moreover, a unique feminist *philosophy* of logic can be seen emerging from feminist writings on language – one that would radically change how we perceive the role of logic and its responsibility to the social.

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Introduction

Does feminism have anything to say about logic?

Recently, attempts have been made to formulate feminist critiques of logical systems.[1] These have been met with a scepticism that borders on contempt.[2] At this point, such a project, for its sheer radicalness, seems to beg justification – an account seems to be required for the very decision to undertake it, outside of any assessment of its alleged results. The notion that any particular set of propositions (not least one regarding as this-worldly a topic as feminism) could force a revision of the rules by which we *organize* propositions seems misguided to many logicians and non-logicians alike. One cannot simply launch into a feminist analysis of the precepts of contemporary logic without first explaining why one has deemed it necessary and appropriate to do so.

Conversely, such a justification, should it prove persuasive, would likely go a very long way towards establishing the initial credibility of anything offered as a feminist critique of logic. Overcoming the resistance to the belief that feminism is irrelevant to logic would ostensibly represent the bulk of the philosophical work to be done – and quite a victory in and of itself.

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[1] Andrea Nye, *Words of Power: A Feminist Reading of the History of Logic* (London: Routledge, 1990), as well as work by Val Plumwood and Marjorie Hass, discussed below.

[2] Noretta Koertge, "The Feminist Critique [Repudiation] of Logic, http://www.indiana.edu/~koertge/rfemlog.html; Susan Haack, *Deviant Logic, Fuzzy Logic: Beyond the Formalism* (Chicago: University of Chicago Press, 1996); Joan Weiner, Review of *Words of Power*, by Andrea Nye, *Journal of Symbolic Logic* 59 (1994): 678-681.

It is my contention that there is in many ways already a conversation going on between logic and feminism. Philosophers of logic have already paved the way for feminist critique, first, by recasting logic as a theorizing activity like any other, rather than a set of absolute and unquestionable postulates, and second, by acknowledging a connection between logic and other areas of philosophy (metaphysics, epistemology, and even political philosophy). For their part, feminists have begun to articulate the concerns they have with classical logic, and these can be read as continuous with existing debates over the tenability of that system.

This paper will be divided into three chapters. In the first chapter, I will sketch the possibilities for critiquing classical logic. By drawing attention to the tumultuous history of the subject and the sheer recentness of the current formal system, as well as to the fact that complete alternative logics have already been proposed, I will demonstrate that deliberating upon logic is a process in which we are already engaged. This will prepare the way for the claim that feminists are no less entitled to weigh in on those deliberations. Chapter 2 will look at what, specifically, feminists have said about classical logic, taken as a set of axioms. Chapter 3 will delve deeper into the relationship between feminism and formal logic, examining logic as a formal language. This division reflects a point noted by Wilfrid Hodges, that the term "logic" ambiguously refers to both a *system of rules* for constructing or analyzing proofs and a formal symbolic *language* into which sentences can be translated.[3]

Before the main argument begins, however, it might serve the skeptical reader to note, in a non-rigourous way, two grounds for suspecting that feminism may have something to say about logic, one originating from within feminism, and the other from within the field of logic. We might call this the case for the *prima facie* plausibility of a feminist critique of logic.

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3 Wilfrid Hodges, "Classical Logic I: First-Order Logic," in *The Blackwell Guide to Philosophical Logic* ed. Lou Goble (Oxford: Blackwell, 2001).

First, there is the fact that logic is a discipline that has actually evolved significantly since its inception, and in historically identifiable ways. Frege's notation would be unrecognizable to the medieval logicians; Parmenides' understanding of negation – the "not" – was overturned completely by Plato, whose version was then overturned by Aristotle, whose uses have fallen into disrepute. And even what is now called "classical logic" – formulated by Frege in the late 19th century and refined by Russell and Whitehead in the early 20th – has never really enjoyed much respite from those who would seek to replace it. Nowadays, those who would suppose that the matter can be put to rest, or, to quote C.I. Lewis, "that there is *a* logic to which everyone would agree to if he understood it ... are more optimistic than those versed in the history of logic have a right to be."[4]

Second, we continue to see, in the work that feminists do, that what at first appears neutral or disinterested or even universal can usually be shown to in fact be specific, vested, and historically locatable. Striking examples include Carol Gilligian's investigation of moral reasoning,[5] and Luce Irigaray's deconstruction of the Freudian account of the subject.[6] What's more, feminist work in epistemology and philosophy of science has called into question the very idea that neutrality is achievable for human knowers, and has suggested that the stipulation that scientific or philosophical investigation be conducted in a neutral manner simply

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[4] Quoted in Haack, xvii.

[5] The significant move, in Gilligan's reassessment of Kohlberg's conclusion that girls' moral development stalls at a certain stage, was her suggestion that, *if* these girls are displaying a different style of ethical reasoning, then this should force us to reevaluate what we take to constitute normal reasoning practice. (If the boys had appeared to stall at some prefigured stage, one can't help but think that Kohlberg would have been inclined to find fault with his own taxonomy, rather than with the entire group of subjects under study.) See Carol Gilligan, "In a Different Voice: Women's Conceptions of Self and of Morality," *Harvard Educational Review* 47 (1977): 481-517.

[6] Irigaray's unabashedly credits Freud as a *good scientist* and takes no quarrel with his description of male and female sexuality. What she balks at is the fact that Freud completes that description without ever considering that what he has identified could be an edifice of cultural construction. Luce Irigaray, "The Power of Discourse and the Subordination of the Feminine," in *This Sex Which is Not One*, trans. Catherine Porter (Ithaca: Cornell University Press, 1985), 73.

serves to legitimize socially acceptable forms of bias – to borrow from Terri Elliott: making familiar, even invisible, what would otherwise appear strange.[7]

It thus seems reasonable to at least attempt to combine the vulnerability of classical logic – or for that matter, of any logical system – with the feminist insight that no knowledge is value-free. Of course, a sizeable gulf still exists between the (apparent) controversies in logic and the feminist challenge to neutrality. Furthermore, it will be difficult to bring the two fields closer together simply by delving into the literature from each. Formal logic and feminist philosophy constitute two very disparate areas of philosophy; one could hardly overstate the differences between their respective subject matters, approaches, and methods. Besides which, given logic's insistence that it operates above and beyond the particular or content-specific, and feminism's suspicion of anything that claims the view-from-nowhere, it would seem near impossible to locate a conversation between them.

In effect, the conclusion of Andrea Nye's groundbreaking *Words of Power* was that something must be wrong with logic as such – that some constitutive feature (abstraction) is precisely what makes logic inimical to the objectives of feminists, or unfit for use for women's discourse. Unfortunately, her conclusion is too easily set aside by anyone (logicians, other philosophers, scientists, mathematicians) committed to having practicable rules of inference. When feminists reject logic, their claims are rejected by logicians in turn.[8]

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[7] Terri Elliott, "Making Strange What Had Appeared Familiar," *The Monist* 77 (1994): 424-433.

[8] Although there is too little literature out there to call this the standard repartee, it is unsurprising. In any case where two things are compared that seem radically different, it is easier to reaffirm the differences between them. Feminist epistemologists have encountered a similar phenomenon in trying to suggest that social values play a role in scientific inquiry. They are usually greeted with one of two responses: either that the troubling scientific research they've uncovered is not sexist in itself (information is neutral; it's the uses to which it is put that can be worthy of praise or blame); or that there *is* a scientific problem at issue, but it is one that could be remedied by a more rigorous

I want engage with logic itself, for two reasons. The first is that logic doesn't seem so dispensable, and it certainly isn't going anywhere. The second is that, while I do believe there is tremendous value in what Nye has done – and that her work should be taken seriously, not least by logicians – I find her approach somewhat unsatisfying, for it implies that the actual content of logic itself *is* beyond feminist reproach. If the only way to criticize logic is to condemn the purposes to which it has been put to use (granted, while claiming that these are not coincidental), then the formal system itself has escaped relatively unscathed. But surely there is at least *something* to be said about logic's own assertions.

Moreover, Nye fails to acknowledge, let alone take advantage of, the diversity that exists within the field. The internal debates and quarrels are precisely what I will be using as leverage for bringing feminism to bear on classical logic. I will show how a specifically feminist critique is not so radically out of step with past and current discussions on the subject, and will review some particular strategies and concerns that feminists have deployed (or could) with regard to the classical system. My point of departure from Nye's analysis is that, rather than finding fault with logic *qua* logic, I prefer to delve into the content of the prevailing system to see what about it feminists find objectionable. What I intend is not so much a wholesale rejection of logic, but an engagement with logic on its own terms that is specifically feminist – tending towards a critical reformulation rather than an abandonment of the project of abstraction or formalization. I want to stay with the difficulty of combining feminist analysis and symbolic logic, rather than diffuse it, and see where it will lead.

Obviously, I feel that this project is rife with possibility. But it is one that traverses a staggering diversity of philosophical subject-matter, including the mechanics of various symbolic logics, the subtleties of different

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adherence to the methods and practices already valued in conventional science. (As pointed out by Janet Wesselius.)

feminist theories, and the distinctive contributions of philosophers of logic from Frege to Russell, Wittgenstein, and Quine. Clearly, a thorough treatment of all of these areas is beyond the scope of any single paper – perhaps even of a single lifetime! – and thus I acknowledge now that the forays that follow sometimes skim over important points of philosophical debate. I can only say that I have attempted, as best I can, not to take any of the literature out of context or to caricaturize it for my purposes. I took it that my arguments would be all the more convincing if they maintained as much continuity as possible with the literature I draw upon. All along, however, I was confronted with the realization that my thesis never would have got off the ground had I restricted myself to pursuing the issue in the way outlined by current philosophy of logic. The reader is simply asked to forgive me for being compendious and for subtly bending and shaping ideas and theories to weave together the account I present.

Chapter 1

Recasting Logic

The crucial first move of any feminist critique of logic would be to reconceptualize the subject in such a way that makes sense of the idea of subjecting it to critique. This starting point is mandated by the treatment that logic is given in general, and by the status that classical predicate (or "first-order") logic, in particular, now enjoys. Generally, whatever has been given the name "logic" – whether a set of guiding principles for reasoning, the very structures underlying thought, or a set of truths about the world – has been viewed as eternal, immutable, and independent of our volition. Oddly enough, despite radical shifts in the prevailing perception of what logic is and what its formulae are, the conclusions reached have always been deemed incontrovertible. Furthermore, the classical first-order system in particular is deemed the natural and inevitable culmination of our efforts to pin down the principles or truths of logic – a refinement that supercedes all earlier techniques.

Before feminists can begin to talk about logic, therefore, they must first make the case that the classical first-order calculus is neither immanent nor necessary, but a philosophical conjecture to be critically evaluated, responded to, and possibly rejected. Feminists have to establish, in the first place, that formulating a logical system is a *process* in which we have a hand (whatever the "natural" constraints might be) – rather than a mere matter of discovery or revelation. As a human inquiry, logic would then be something about which there could be disagreement.

Establishing this much about logic would already be quite a feat. Andrea Nye has noted that "The suggestion that the logic that informs various semantic systems is not a given to be discovered but rather a criticizable theory of language proved one of the most controversial of feminist philosophical claims."[9] (Nye optimistically speaks of this in the past tense, though, at least in this paper, we are not there yet.) Fortunately, there are surprisingly many non-feminist sources that buttress the point that logic can be challenged.

HISTORICAL DEVELOPMENT

As Bell, Solomon and DeVidi have noted,

> It is not uncommon to encounter the view, more or less explicitly defended, that classical predicate logic *is* logic, or at least that it's all the logic anyone needs to know. What is not clear ... is *why* classical predicate logic should hold such a privileged position[10]

It is not clear, to expand on the question, why classical logic *not only* dominates the field, but gets treated in a way that belies the fact that there are even other logics to speak of, not to mention other ways of conceptualizing logic altogether. In fact, the current state of logic – including the contemporary notion of logical truth, the use of truth-tables, the idea of permutation invariance, etc. – is by and large the product of strikingly recent developments, if one begins counting at Aristotle's *Organon*. And, Stephen Käufer points out, those "dramatic developments [took] place on the basis of a widespread and fundamental re-assessment of the nature of logic and its role in philosophy, [one] that by no means produced easy agreement."[11]

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9 Andrea Nye, "Semantics," in *A Feminist Companion to Philosophy*, ed Alison M. Jaggar and Iris Marion Young (Malden, MA: Blackwell, 1998), 160. Nye's emphasis is on the role of logic in language. We will see why when we explore her ideas further in Chapter Three.

10 John L. Bell, David DeVidi and Graham Solomon, *Logical Options: An Introduction to Classical and Alternative Logics* (Peterborough, ON: Broadview Press, 2001), 102.

11 Stephen Käufer, "On Heidegger on Logic," *Continental Philosophy* Review 34 (2001): 457.

But there is an amnesia about those disagreements – one which leads José Ferreirós to go so far as to describe "a characteristic tendency to ignore historical shifts in the delimitation of the subject" such that "the secondary literature frequently *presupposes* the present notion of logic, as if it were ahistorical."[12] Let us then review some of the philosophical decisions that culminated in the present conception.

Broadly speaking, the development of modern logic can be broken into three phases. The first phase includes Aristotle's elaboration of the syllogistic, and more specifically the gloss given to it by Leibniz and his followers.[13] On this view, logic described the most highly generalized features of the world; its laws were statements about being itself. These were rules formulated in terms of membership, identity, relation ("All S is P," "No S is not-P," etc.); they were prescriptions for thinking subjects insofar as they spoke to the way reality *itself* was organized. In other words, they constrained thought insofar as they always already operated upon all possible objects of thought.

The succeeding phase came when Kant eschewed this too-worldly characterization and sharply separated logic from ontology. He restricted logic's concern to matters of form alone, and at the same time refocused its gaze on the thought of finite, rational agents, rather than on the dogmatists' immediately intelligible universe. Logic went, as MacFarlane describes, from *general* to purely *formal*[14]. This shift is significant, for where certainly the laws of logic had never been considered up for negotiation, they were now even further beyond questioning – a logic that constituted the very condition of the possibility of thought for human agents could clearly not be interrogated by them.

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[12] José Ferreirós, "The Road to Modern Logic – An Interpretation," *The Bulletin of Symbolic Logic* 7 (2001): 443.
[13] John MacFarlane, "Frege, Kant, and the Logic in Logicism," *The Philosophical Review* 111 (2002), 45.
[14] MacFarlane, "Frege, Kant, and the Logic in Logicism," 46.

The key period of development, however, came in the 19th century with the advent of mathematical logic, which not only effected a culmination of the foregoing drive for total inviolability, but squeezed out any alternate conceptions of logic.

Mathematical logic actually grew out of an attempt to reform mathematics, which was criticized in the 19th century for being ontologically laden, too tied to material or physical reality.[15] Those who can be credited with having formulated classical logic – Frege, and Russell and Whitehead, among others – did so in the process of trying to reduce arithmetic to logic (the program known as "logicism"). Ironically, the outcome of this process was not a mathematics logicized, but a logic mathematized. Claiming to inherit exclusively the tradition begun by Aristotle, mathematical logic was a system of complete abstraction and formalization, and bore an even thicker mantle of unchallengability.

It also squeezed out other conceptions of logic that were prevalent at the time, such as Hegelian logic and informal logic. The former fell victim to the ongoing drive to distinguish logic from ontology, while the latter was deemed too tied to human psychology. Frege was the most instrumental for defeating the suggestion, once and for all, that logic is fundamentally about what *we*, *humans*, do. For Frege, logic proper didn't concern itself with describing the fundamental structure of human rationality, nor did it take upon itself the task of writing prescriptions for inference-making.[16] As Goldfarb explains, on Frege's account "the business of pure logic is to arrive at [true general statements: the logical] laws, just as the business of physics is to arrive at physical laws. Logical laws are as descriptive as physical laws, but they are more general."[17] His most important critic *and* legatee, Russell, likewise believed that "logic is

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[15] Volker Pechkaus, "19th Century Logic Between Philosophy and Mathematics," *The Bulletin of Symbolic Logic* 5 (1999): 433-450.
[16] Contrast: being *usable* as a guide for analyzing arguments.
[17] Warren Goldfarb, "Frege's Conception of Logic," in *Future Pasts: The Analytic Tradition in Twentieth Century Philosophy*, ed. Juliet Floyd and Sanford Shieh (Oxford: Oxford University Press, 2001), 28.

concerned with the real world just as truly as zoology, though with its more abstract and general features."[18]

The logical laws could no longer be discovered by peering into human intellection, any more than could the laws of physics, but now stood independent, reified. But this reversal of the Kantian picture was by no means a return to the one that had preceded it. The laws of logic were now *neither* fundamental principles of ontology, *nor* the constitutive forms of thought, but immutable truths reflected in everything at once and at all times – the natural numbers, the physical universe, human thought (Frege believed that any person who rejected a law of logic would demonstrate "a hitherto unknown form of madness."[19])

In sum, when the conception of "logic" was narrowed in the 19th century, the system that emerged took on a decidedly un-philosophical appearance.[20] And since Aristotle, the progression towards full formalization was treated as a natural culmination or evolution – a shedding of the trappings that philosophers were misguided in trying to attach to logic in the first place – with the narrowing of the scope of the term "logic" treated as a mere clarification and not a philosophical decision. This is visible in the following passage from Kant:

> That logic has already, from the earliest times, proceeded upon this sure path is evidenced by the fact that since Aristotle it has not required to retrace a single step, unless, indeed, we care to count as improvements the removal of certain needless subtleties or the clearer exposition of its recognised teaching, features which concern the elegance rather than the certainty of the science. It is remarkable also that to the present day this logic has not been able to advance a single step, and is thus to all appearance a closed and completed body of

[18] Quoted in Goldfarb, 28.

[19] Quoted in Pascal Engel, *The Norm of Truth: An Introduction to the Philosophy of Logic*, trans. Pascal Engel and Miriam Kochan (Toronto: University of Toronto Press, 1991), 258. The quote is from Frege's *Foundations of Arithmetic*.

[20] I will update the story of how the conceptualization of logic has progressed at the beginning of the next chapter. For now I want simply to draw attention to the period during which logic became mathematized.

> doctrine. If some of the moderns have thought to enlarge it by introducing *psychological* chapters on the different faculties of knowledge (imagination, wit, etc.), *metaphysical* chapters on the origin of knowledge or on the different kinds of certainty according to difference in the objects (idealism, scepticism, etc.), or *anthropological* chapters on prejudices, their causes and remedies, this could only arise from their ignorance of the peculiar nature of logical science.[21]

The problem with this gloss, whether from Kant or from Frege and Russell, is that it masks the fact that logicians are *still doing philosophy*, and not mathematics. After all, the mathematical results themselves cannot do all of the work.[22] And as Ferreirós points out, "First-Order Logic is *not* a 'natural unity', i.e., a system the scope and limits of which could be justified solely by rational argument ... [but] the sound and satisfactory outcome of a fascinating combination of rational argument and *historical* contingencies."[23] He gestures, for example, to the fact that the sentential calculus includes only truth-functional operators, while the predicate calculus refers to a universe of discourse and uses interpretation; the former is decidable while the latter is not. In addition, he recounts that decades were spent investigating and then abandoning diverse approaches (set theory, type theory, second-order logic) before the modern system was finally zeroed in on.

Moreover, their starting-point or first foothold in doing so is not an uncontroversial given, but an inherited philosophical, historically-locatable tradition. One should not underestimate the controversy, indeterminacy, and ultimately, the human agency involved in deciding either what logic, as a concept, denotes, or what the ideal system is. MacFarlane explains why:

> *Logic* is not a natural kind concept. It does not play a role in the laws of nature, and so the natural order of the world

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[21] Immanuel Kant, *Critique of Pure Reason*, trans. Normal Kemp Smith (New York: Palgrave Macmillan, 2003), 17-18.
[22] John MacFarlane, "What does it mean to say that logic is formal?" (Ph. D. Diss, University of Pittsburgh, 2000), 23-24.
[23] Ferreirós, 441 (emphasis added).

> cannot take up the slack between *our* ways of grabbing onto the concept and the concept itself... And that is why an investigation into the nature and bounds of logic must attend to the tradition of demarcating logic.[24]

Finally, the alleged continuity in the history of logic (the idea that Russell, Frege, Kant, Aristotle are in fact in dialogue with each other, making various attempts to get at the same thing – "Logic" in the singular) presupposes that there is some sort of stable, Platonic entity at stake. Upon close inspection, however, there is no obvious basis upon which to locate this alleged common cause. MacFarlane again:

> Our intuitions about logicality are not a kind of perception of an extramental reality: they are historical artifacts, a product of our logical and philosophical *educations*. To the extent that there is intersubjective agreement about them, it should be attributed to a shared tradition, not access to a tradition-independent reality.[25]

These two points – that logic is still philosophy, and that it is a subject matter that one necessarily approaches by bringing historical knowledge to bear – militate against the perception of "logic" (in other words, 20th century classical logic) as static and unquestionable. Let us now make the discussion even more concrete, by looking at specific challenges to the classical system.

THE SIGNIFICANCE OF RIVALRY

Perhaps even more significant than the varying approaches that have been applied to logic throughout history is the fact that, following Frege's turn towards a mathematical system with a fully formalized syntax and semantics, multiple different logical systems were proposed. Within the same understanding of logic, that is, diverse proposals were made as to which calculus is best. Lukasiewicz, Bochvar and Kleene each proposed a logic wherein a third truth-value was available for evaluating sentences

[24] MacFarlane, "What does it mean to say that logic is formal?" 23.
[25] MacFarlane, "What does it mean to say that logic is formal?" 25-26.

alongside "true" and "false". Relevance logicians such as Read,[26] Meyer and Routley,[27] formulated a system designed to capture the idea that the premises of an argument should be relevant to its conclusion, resulting in the rejection of key theorems of classical logic and amendments to the natural deduction proof method. Brouwer and others developed intuitionistic logic which, having recast logical truth as provability, abandoned the law of excluded middle (that determinately, either A is the case or not-A is).[28] And proponents of various paraconsistent logics rejected another pillar of classical logic, namely the law of non-contradiction (that A and not-A cannot both be the case).[29]

The existence of viable alternatives means that, contrary to the air of fixity surrounding the classical system, we are actually in the position of having to *choose* between logics. It must be granted that generally, "deviant" systems are somewhat less elegant or user-friendly, more complex or more cumbersome – and even downright unwieldy for complex formulae. They do not enjoy the cleanness that comes on the heels of certain decisions made in classical logic, such as to only use two truth-values, or only one type of negation. And it may well be that none proves nearly as desirable as the classical system. But, as Graham Priest puts it, whether or not they are ultimately *preferable*, "their presence serves to remind us that logic is not a set of received truths but a discipline where competing theories concerning validity vie with each other."[30]

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[26] Stephen Read, *Relevance Logic* (Oxford: Blackwell, 1988).
[27] Richard Routley et al., eds., *Relevant Logic and its Rivals*, vol. 1 (Atascardero, CA: Ridgeview, 1983).
[28] Since, clearly, there are instances when neither a proposition nor its negation can be proven. The intuitionists' famed example has to do with the extension of pi – we can neither prove nor disprove that, say, somewhere in the extension of pi there is a series of nine 9's in a row.
[29] "Paraconsistency" refers to propositions being able to take on more than one truth-value at once.
[30] Graham Priest, quoted in Greg Restall and J. C. Beall, "Logical Pluralism" *Australasian Journal of Philosophy* 78: 488. I do not here wish to take a position on the debate between absolutists – those who feel that there is only one correct logic – and pluralists, who feel that this claim is unjustified.

But since the issue of rival logics has been a matter of mild controversy, let us look at it a bit closer. Let us say that there are two crucial conditions which need to be met for an alternative to classical logic to be considered a rival: first, that it be rival, and second, that it be a logic, i.e. that it fulfil the role that a logic is expected to fill, or that it perform the function for which a logic is required. We'll take each in turn.

rivalry

The first point – rivalry – refers to genuine incompatibility with classical logic, such that the two systems could not be used simultaneously, given that they would contradict one another at some point. It has been debated whether ostensibly rival logics actually challenge classical logic. Quine, for one, didn't think so, contending instead that rival logics must be speaking about different logical constants and thus can't be threatening the axioms of classical logic (if one denies that the law of excluded middle applies to the connective "or", then one is at that point no longer speaking of "or" as we know it, but must be referring to some other connective). Because, says Quine, these systems essentially *change the subject*, classical and non-classical logics speak only at cross-purposes.

However, a far more persuasive analysis comes from those, like Susan Haack, who contend that there are logics that, crucially, disagree as to which forms of inference are valid.[31] Haack points out that Quine's position only follows if we hold the definition of the logical particles constant, which is in fact an arbitrary move (not to mention question-begging). She contends that there is an unanalyzed or primitive notion of any given logical particle, distinguishable from the attempts that are made to pin it down in an appropriate definition. This is why we can ask whether "or" is inclusive or exclusive, or whether indicative conditionals

[31] This is my gloss on what it really means for a logic to be rival. Susan Haack spends the first chapter of *Deviant Logic, Fuzzy Logic: Beyond the Formalism* defeating the claims that the conflict between rival logics and classical logic can be diffused.

(propositions of the form "if...then") are true in every case in which their antecedent is false.[32] It is precisely this primitive grasp of the operator that will spur the construction of a particular truth-table, or the placement of that operator in a particular axiom. At any rate, Haack claims, there is enough commensurability to show that these different logics do in fact contradict one another. While rival logics may differ from classical logic in any number of ways, such as the number of truth-values, the logical vocabulary, or the preferred proof method, the differences aren't simply superficial.

status as logics

That non-classical logics are indeed complete and coherent can be established in a number of ways. As a first try one might point out that they find application in technology. On a most basic level, the fact that non-classical logics "work" is established in the concrete applications that they have in computing and technology. There is computer programming based on intuitionistic logic, for example,[33] and fuzzy logic has been used successfully "in technological applications such as controllers for air-conditioners and other appliances, in subway braking systems, and so forth."[34] That these logics are trusted for these purposes indicates at least that they are functional, which implies that they are consistent. Interesting as this is, however, it ultimately proves only that they are serviceable as basic structures over which series of commands can be laid, and does little to tell us why these systems are to be considered full-blown logics – that is, the type of entity that prescribes how arguments should be analyzed.

There is no need to settle this question by giving an original and definitive account of what a logic is, or in what sense it must be

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32 This has been the subject of much debate. Some feel that a conditional should be counted false when its antecedent is false. The classical system counts this case as true.

33 Bell, DeVidi and Solomon, 194-195.

34 Leon H. Brody, review of *Deviant Logic, Fuzzy Logic: Beyond the Formalism*, by Susan Haack, Library Journal 121 (1996): 81.

prescriptive. The point can simply be made by proceeding naturalistically, examining what has been deemed, uncontroversially, to qualify as a logic, and making comparisons from there. It seems that, as far as anyone is concerned, if anything should be considered a full-blown logic, classical logic should. Yet even if we allow it to be the standard bearer, other logics pass muster. Any relevant characteristics found in the classical system also appear in its rivals. So, for example, one of the most salient features of a logic is taken to be its adequacy results, or whether the syntactic proof method is sound and complete with respect to the (semantic) interpretive schema (i.e. whether proof method will generate all and only those sentences from a given set of assumptions that would be consistent with that set of assumptions on a semantical interpretation – an assignment of truth-values). This condition can and has indeed been met by all of the alternative systems mentioned above (doing so is, after all, simply a matter of making the appropriate technical adjustments: the semantics or the syntax can be gerrymandered to reflect the exigencies of the other).

There are other features of classical logic that could be highlighted, such as having a fixed set of logical constants, or a fully formalized language, or being reducible to a set of axioms. Likewise with these criteria, one can easily argue that *if* classical logic is a logic, then so is relevance logic, etc.

Such is the case for naturalistic comparisons. On a broader level, however, the question to ask of a logic is whether it really captures all and only valid deductions.[35] I take it that all logics implicitly make a claim to sanction all and only valid forms of inference.[36] But that is, perforce, a claim that is made on external, philosophical grounds, i.e. from outside of the logic proper. The technics of the system (its syntax and semantics) tell us *how* it can be used to evaluate actual arguments

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35 Put another way: whether it is sound and complete with respect to some pre-theoretic understanding of validity.

36 This is what distinguishes a logic, the way we normally use the term, from computer circuit logic, such as the one used in the subway braking system – the latter is fixed arbitrarily.

and sentences of a natural language. They do not tell us *why* (or whether) the system should be adopted in the first place. Let us explore this further.

EVALUATING LOGICAL SYSTEMS

The prejudice that sustains the attitude that Bell, Solomon and DeVidi describe – the one behind using the term "logic" in the singular – is the belief, discussed above, that logic is immanent (whether in the universe or in our own rationality or in the idea of proof-making), fixed, and lying beyond our ability to question. This view, however, seems unjustified.

Pascal Engel argues that logical systems are not descriptions of universal forms, but prescriptive accounts of how to make valid inferences. And

> normative principles [do not] fall from the skies. Just as moral truths are not revealed, logical truths are not revealed... They do not come, as Frege thought, from a world of 'the being-true'... They come from the idealisations that we make from our inferential practices, from our ordinary judgements...[37] [Logic] does not state any truth about the world.[38]

In other words, Engel reclaims logic as a human inquiry that is principally aimed at directing the (human) activity of inference-making.[39] He does not thereby conclude that logic can be anything we like whatsoever, for then it would surely lose some of its normativity (read: prescriptiveness for how to proceed deductively). He does, however, maintain that we cannot pretend *not* to be ultimately relying upon our own intuitions in thinking about logic.

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[37] Pascal Engel, *The Norm of Truth: An Introduction to the Philosophy of Logic*, translated by Pascal Engel and Miriam Kochan (Toronto: University of Toronto Press, 1991), 313.

[38] Engel, 320.

[39] Of course, this is something that we would like to teach machines to do as well, but that's just the point – *we* would be teaching them.

Engel's view is, in the main, a rejection of logical Platonism. There is, indeed, an odd pantheistic ring to the idea that the logical laws inhere somehow in the universe. Surely they are proper instead to thinking.[40] Of course, even if one accepted a Platonic view of the laws of logic, there would remain the epistemological problem of how it is that *we* could come to know them (or know that we know them, etc.). Engel's move, rather than a return to a naïve psychologism, is one necessitated by the unpalatability of its alternative.

The fact that viable, mutually contradictory systems exist, which are not true in virtue of their correspondence to a Platonic realm, and which do not attest to their own plausibility, means that at some point a *decision* needs to be made as to which system should be used. Deciding is a matter of consulting our philosophical intuitions, likely with reference to our other philosophical commitments. In other words, the process by which we arbitrate between rival logics is the same one by which we contemplate ethics, metaphysics, or epistemology.

Logic is not so divorced from the rest of philosophy, after all, either in content or in methodology. Engel recognizes this point: "The usual logical categories are correct only in so far as they agree with a more general analysis of the fundamental categories of our thought as they are expressed in natural language and in the general conditions of our experience."[41] Gobel notes that

> Many of the developments in philosophical logic have been motivated by broad philosophical concerns. Intuitionistic logic reflects a particular perspective on the nature of judgement and truth. Many-valued logic grew out of Lukasiewicz's effort to construct a logic that would avoid the conclusions of fatalism and determinism... Thus, logic supports philosophy, and philosophy feeds logic.[42]

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[40] I use the verb rather than the noun "thought" since the latter implies that logic underwrites our ability to form thoughts at all; logic, to me, seems to come into play when *proceeding* from one thought to another.

[41] Engel, 4.

[42] Lou Gobel, ed., *A Guide to Philosophical Logic* (Oxford: Blackwell, 2001), 1.

If logic is a theorizing activity like any other, then it is one for which we are responsible, and it is important to *recognize* our thorough-going agency in the process of thinking about logic (a notion of agency that is be contrasted with being the passive receivers of some necessary truths). If logical systems are not recognized as the product of philosophical deliberation, their precepts will be reified. This binds our own hands, and is not only disingenuous, but limits our ability to *critically* evaluate our beliefs. If no account is given as to why a particular system is endorsed, we can only throw up our hands when we encounter implications or consequences of that system that we find unpalatable.

Beyond simply not wanting to limit our options of fall into close-mindedness, however, we might say that those working on logic (or, in general, any area of scholarship or inquiry) should take ownership of the process, so that they can be held accountable for its outcomes, whatever the stakes may be. An elaboration of this point can by found in Lorraine Code's work. The epistemology she formulates tries to take account of the role we play not only in generating beliefs, but in choosing *how* to generate those beliefs, and how to view knowledge in the first place.

> I call my position 'responsibilism' ... when *human* knowledge is under discussion... because the concept 'responsibility' can allow emphasis upon the active nature of knowers/ believers... In my view, a knower/believer has an important degree of choice with regard to modes of cognitive structuring, and is accountable for these choices.[43]

Thus, starting from a conception of logic that is largely inherited, we must, if we are to count our work philosophy and not anthropology, turn and look back at that inheritance and question its legitimacy.

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[43] Lorraine Code, *Epistemic Responsibility* (Hanover, NH: University Press of New England, 1987), 50-51.

And there is much to question, including what logic *is*,[44] to what it applies, and which theorems are correct. It is not, in other words, simply a question of choosing the best logic, but of deciding what we want that logic to accomplish. (It may well be that classical logic is the most parsimonious system available now. But is that criterion important? More important with others that might conflict with it? Why?)

In the next chapter, I will be calling upon examples of how logicians, epistemologists, and philosophers have brought specific concerns from outside of logic to bear on the classical system. I will be demonstrating how those who have been uncomfortable with the ontological implications of the formal system have been led to challenge some of its precepts – sometimes culminating in the formulation of a new logic altogether. My point will be that, given the precedent set by this scholarship, recent feminist critiques of classical logic are not so outlandish after all, and in fact can be seen as of a piece with these non-feminist ones.

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44 Even the most basic stipulations about what logic is have come under question. Edward Zalta has denied that logical truths are always necessary (drawing from the example of "I am here now"); Quine has rejected the idea that they are (or that *any* proposition is) analytic, and the idea that they are a priori is, again, put into question by the proliferation of alternatives (which proves the point that epistemologically, the simplest of logical laws *can* be doubted). Finally, MacFarlane has pointed out that even the existing conceptualizations of the *formality* of logic are unsatisfactory. See Edward Zalta, "Logical Truths that are not Necessary," *The Journal of Philosophy* 85 1988, 57-74; W. V. O. Quine, "Two Dogmas of Empiricism" *The Philosophical Review* 60 (1951): 20-43; MacFarlane, "What does it mean to say that logic is formal?".

Chapter 2

Logic and Ontology

The contemporary understanding of logic is *not*, per Frege and Russell, that it speaks abstract truths about the world. Rather, as Wittgenstein and Tarski argued, it doesn't describe the world at all.[45] Logical truths are true in virtue of the meaning assigned to the logical constants. So, "P or not-P" is true in virtue of the meaning of "or" and "not-", and not because everything in the world abides by this statement. "P or not-P" is still true *of* everything in the world (and without), but only because it would hold true regardless of what was substituted in place of "P" (including non-existent objects).

In the last section, we saw that there was a historical drive, in the philosophy of logic, to distinguish *formal* relationships from the regularities or vagaries of the *material* world. Tarski and Wittgenstein see this drive through to its conclusion. And on their conception, given that logic doesn't refer to the world at all (*rightly* so, *necessarily* so), it becomes nonsensical to suggest that it could possibly be partisan to one or another way of *describing* the world – sexist, feminist, or otherwise.

However, there are those who aren't so sure that logic can be kept entirely isolated from metaphysics, and there is a tradition of pointing out some of the implications that the classical system seems to carry over to the realm of ontology. In these critiques, worldly phenomena are

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[45] "[When a] proposition is true for all the truth-possibilities of the elementary propositions[,] we say that the truth-conditions are tautological. Tautologies ... are not pictures of reality. They do not represent any possible situations." Ludwig Wittgenstein, *Tractatus Logico-Philosophicus*, trans. D. F. Pears and B. F. McGuniness (New York: Routledge, 1961): §§4.46 – 4.462.

pointed out which do not appear to operate according to the laws of classical logic. And clearly, these theorists say, while logic isn't supposed to represent anything in the world, neither is it supposed to be contradicted by anything in it.

It is worth examining these claims, to see how some of the worries that feminists have expressed in recent years about classical logic can be understood along the same lines.

EXISTING ONTOLOGICAL CHALLENGES

vagueness

One of the most persistent objections to classical logic has centered around the issue of vagueness. On this account, logic forces us to make unacceptable conclusions about the way that things are. The issue of vagueness reaches its pitch in the sorites paradox, which goes something like this:

One grain of sand does not make a heap.
A single grain of sand cannot make a difference as to whether or not something is a heap.
Therefore, one million grains of sand is not a heap.

The paradox can of course be formulated in the other direction (one million grains of sand makes a heap; subtracting one makes no difference; a single grain of sand is a heap), and applied to all sorts of other predicates as well ("bald" and "tall" are two favourites). It has also been applied, creatively, to various other scenarios: a series of cards that move progressively from orange to red, in so gradual a fashion that no human observer could distinguish between two adjacent ones[46]; or a series of moments in the life of a maturing tadpole (when does it become

[46] Michael Dummett, "Wang's Paradox," *Synthese* 30 (1975): 301-324.

a frog?),[47] or the number of heartbeats in one's youth (at what moment does one become an adult?)[48], and so on. The point is that the argument, when formalized classically, is valid, and its premises rather uncontroversial – yet its conclusion seems nevertheless patently false.

Generally, the discussion of vagueness is considered to have import for our understanding of the relationship between logic and natural language. That is, if the sorites paradox stands, then it seems to show either that classical logic can't accommodate certain natural language predicates, or that our predicates aren't actually as vague as we think they are. So it might be asked why I am addressing this issue in a chapter about ontology. I do not believe that the concern about vagueness is limited to issues of predicate application, i.e. language. At least part of the objection to classical logic on this issue seems to be motivated by the feeling that classical logic can't accommodate something important about the world: that if you subscribe to the law of excluded middle, the law of non-contradiction, mathematical induction, bivalence, etc., then you squeeze out the possibility of there being degrees of a predicate, or things that are vaguely F, or many, many shades between F and not-F. It divvies up the world too neatly.

If classical logic is to be retained in the face of the sorites argument, either one of the premises, or the conclusion, must be rejected. The most likely candidate, if we are to retain the meaningfulness of our predicates at all, is the second premise (surely one grain of sand does not make a heap, yet one million do). Rejecting it implies that there is a precise number of grains of sand that make a heap, an instant in time at which the tadpole becomes a frog, a single heartbeat that marks the transition to adulthood, etc.[49] And this not only tortures the predicate in question, but strikes one as metaphysically *weird*. Alternatively, to accept the

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[47] Linda Claire Burns, *Vagueness: An Investigation into Natural Languages and the Sorites Paradox* (Norwell, MA: Kluwer Academic Publishers, 1991), 90.
[48] Bertrand Russell, "Vagueness," *The Australasian Journal of Psychology and Philosophy* 1 (1923): 84.
[49] This is known as the epistemic view. See, for example, Timothy Williamson, *Vagueness* (London: Routledge, 1994).

truth of the premises and reject the conclusion likewise seems not only unfaithful to the predicate term (one million grains of sand doesn't make a heap?), but also metaphysically odd (there are no heaps – heaps are an illusion – what of frogs and tadpoles?!). In short, we can interpret classical logic as giving us unacceptable ontological conclusions as much as unacceptable linguistic ones.[50]

Those who wish to retain the vagueness of natural language predicates take one of two general approaches to the logical issue posed by the sorites paradox. The first is to reaffirm the gulf between formal logic and natural language. Dummett, for example, argues that vagueness is a fundamental feature of (some parts of) natural language, and that there can be no formal logic that accommodates vagueness, leading him to conclude that logic simply doesn't speak to language.[51] Likewise, Russell concludes that natural language cannot possibly be a province of logic, precisely because it is vague.[52]

The second approach involves reexamining logic to make it more accountable to natural language. Adherents are not as quick to deflate the challenge vagueness poses for the classical system. Rather than assuming, from the outset, that the rules of logic are unassailable, they have taken it upon themselves to determine exactly which features of classical logic itself are posing the problem. Their conclusions have varied: those who understand the sorites argument as a series of conditionals ("if one million grains of sand make a heap, 999,999 grains of sand make a heap," etc.) believe it is the rule of modus ponens, or at

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[50] I am not the first to suggest that vagueness is an issue that can be discussed in terms of ontology. Parsons and Woodruff talk about vagueness pertaining to states of affairs. Just as, at the linguistic level, it is vague whether certain predicates apply to given objects, at the ontological level, it is vague whether a given object has a certain property. See Terence Parsons and Peter Woodruff, "Worldly Indeterminacy of Identity" in *Vagueness: A Reader*, ed. Rosanna Keefe and Peter Smith (Cambridge: MIT Press, 1996). Russell, on the other hand, explicitly states that vagueness can only attach to a description – i.e. can only operate at the level of language ("things are what they are, and there is an end of it"). See Russell, "Vagueness".

[51] Dummett, op cit.

[52] Russell, op cit.

least the repeated applications of it that take one from one million grains of sand down to one. Others believe it is the principle of bivalence – the restriction to two truth-values, "true" and "false". Depending on how the problem is diagnosed, an appropriate amendment of the classical rules is then suggested. Or, put another way, an alternative logical system is arrived at which avoids having to count the sorites argument valid. These systems have included three-valued logic, fuzzy logic, and degree theory.[53]

The ontological dimension of the vagueness problem can thus be met with a retreat to narrower confines for logic, or followed through to new logical horizons. This is a pattern we will see repeated with other ontological challenges, including those presented by feminists, albeit with some very different challenges at stake.

quantum physics

Another possible ontological lever for exposing the inadequacy of classical logic comes from quantum physics. Sophisticated experiments that manipulate and study the behaviour of particles have yielded consistent and reliable observations that appear to violate classical logic. The two-slit experiment[54] violates bivalence, the law of excluded middle, or the law of non-contradiction, depending on how one wants to handle the results; and the Heisenberg uncertainty principle violates the rule of distribution.[55]

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53 Three-valued logics introduce a third truth-value, "indeterminate", to be applied to borderline cases. Fuzzy logics allow statements about the tallness, etc., of an object to be true to a certain degree, or allow an object's membership in a set to be described in degrees. See, for example, Dorothy Edgington, "Vagueness by Degrees," in Keefe and Smith.

54 See Richard Feynman, *The Character of Physical Law* (Cambridge: MIT Press, 1965), Chapter 6.

55 Since a conjunction of disjunctions regarding position and velocity ("the particle must be in position a or position b, and must have either velocity c or velocity d") cannot be distributed into a disjoined series of conjunctions regarding *both* position *and* velocity ("the particle must have position a and velocity c, or position a and velocity d, or position b and velocity c, or...").

As in the case of vagueness, logicians disagree as to how to deal with these results. Some continue to defend classical logic, others have proposed alternative logics to accommodate quantum results.[56] Interestingly, a justification for revising logic in the face of quantum experimental results comes from a staunch defender of the classical system.

Quine maintained that classical logic should be preserved almost at all costs, variously insisting that alternatives exacted too high a price in terms of the loss of simplicity and familiarity, that arguments thus far to amend classical logic were unconvincing, and even more strongly, that classical logic is so fundamental to our ability to make sense of language and the world that it is the one thing that should be preserved or assumed in the translation, or interpretation, of an unknown language.[57] Greatly hesitant about straying from the classical system, he seems to fall in line with the general conservatism about logic I described in Chapter 1. Yet he himself provides us with an important conceptual apparatus for dislodging the classical system. In his "Two Dogmas of Empiricism", he unabashedly rejects the analytic/synthetic distinction, describing our knowledge in a way that expressly maintains that even the laws of logic can be subject to revision. It is worth quoting a passage at length:

> The totality of our so-called knowledge or beliefs, from the most casual matters of geography and history to the profoundest laws of atomic physics or even of pure mathematics and logic, is a man-made fabric which impinges on experience only along the edges. Or, to change the figure, total science is like a field of force whose boundary conditions are experience. A conflict with experience at the periphery occasions readjustments in the interior of the field. Truth-values have to be redistributed over some of our statements. Re-evaluation of some statements entails re-evaluation of others, because of their logical interconnections -- *the logical laws being in turn*

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[56] Notably G. Birkhoff and J. von Neumann, "The Logic of Quantum Mechanics," *Annals of Mathematics* 37: 823-843. The issue of quantum physics is a particularly interesting one for logic, since it points to the illicit possibility that it may actually be appropriate to apply different logics to different subject-matters.
[57] W. V. O. Quine, *Philosophy of Logic* (Englewood Cliffs, NJ: Prentice-Hall, 1970).

> *simply certain further statements of the system, certain further elements of the field.* Having re-evaluated one statement we must re-evaluate some others, whether they be statements logically connected with the first or whether they be the statements of logical connections themselves. But the total field is so undetermined by its boundary conditions, experience, that there is much latitude of choice as to what statements to re-evaluate in the light of any single contrary experience. No particular experiences are linked with any particular statements in the interior of the field, except indirectly through considerations of equilibrium affecting the field as a whole.[58]

In other words, while Quine cautions elsewhere that the rules of classical logic should be the very last thing to be doubted, doing so is not at all altogether impossible – or even, in the face of certain evidence, unreasonable. "No statement," opens *Two Dogmas*, "is immune to revision."

What does this have to do with feminism? Naturalist feminist empiricists have already seized upon the potential this analysis contains for positing a real, and closer than imagined, relationship between statements emanating from science and beliefs about gender.[59] And Lynn Hankinson Nelson and Jack Nelson have even suggested that Quine's thesis lends credence to the idea that feminist theorizing can have implications for classical logic.

> Insofar as feminist and other contemporary theorizing in the sciences may lead to significant revisions in scientific theories, or to the development of new theories incompatible with some currently maintained, Quine's arguments suggest that these developments *could* carry implications for logic.[60]

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[58] Quine, "Two Dogmas of Empiricism," emphasis added.
[59] See, for example, Louise Antony, "Quine as Feminist: The Radical Import of Naturalized Epistemology," in *A Mind of One's Own*, ed. Louise Antony and Charlotte Witt (Boulder, CO: Westview, 1993), Richmond Campbell, *Illusions of Paradox: A Feminist Epistemology Naturalized* (Lanham, MD: Rowman & Littlefield, 1998).
[60] Lynn Hankinson Nelson and Jack Nelson, "Logic from a Quinean Perspective: An Empirical Enterprise," in *Representing Reason*, ed. Rachel Joffe Falmagne and Marjorie Hass (Lanham, MD: Rowman & Littlefield, 2002), 196.

They are cautious as to just how this might occur, but they do indulge us with one potential example. The research of feminist biologists such as Ruth Bleier, Ruth Hubbard, and Evelyn Fox Keller indicates that a holistic schematic would be more explanatory, when applied to genetic phenomena, than current "discrete gene"-"discrete function" models. Their schematics may, in turn, not be very well-served by the representational structures available under classical first-order logic (where objects in the domain can only be countenanced as individuals?), with the result that "first-order quantification will prove inadequate for the canonical form of scientific theories, or at least for biology."[61]

This suggestion is offered only tentatively, and in a way that leaves the reader yearning for specifics. What is important, however, is that *were* feminism to exploit this angle for critiquing logic, it would not be a move without precedent. Philosophers of logic, treading in the footsteps of Quine, have applied his arguments in Two Dogmas to call for revisions to classical logic in the light of quantum mechanics. That a feminist-inspired conceptual reorganization of one of the physical sciences could likewise provoke a reevaluation of first-order logic is not so strange. It would, rather, be of a piece with these other Quinean approaches.

future contingents

Finally, the issue of future contingents has likewise provoked speculation that classical logic commits us to an unacceptable metaphysics. The issue was already recognized by Aristotle,[62] and has received various formulations since. I will offer my own here. Classical logic is bivalent – i.e. treats all sentences as true or false – and includes the law of excluded middle, according to which, for all sentences S, either that sentence or its negation, ~S, is true. A problem seems to arise when we consider statements about the future, for in cases where the event in question does not seem necessary or already determined to happen, it is arguable

[61] Nelson and Nelson, 187.
[62] See *de Interpretatione* IX.

that no truth-value should be assigned to the utterance of some speculation on the matter *now*. For example, the sentence "The Prime Minister of Canada in 2025 will be named Robert" does not seem either to be true or false now, even though by 2025 it will become so. Assignment of either of the classical truth-values seems odd: deeming it true of course attributes to the sentence some oracular insight, but deeming it false (our only alternative) is no less problematic, since it implies that the PM in 2025 will, determinately, *not* be so named (homonymous candidates take heed).

Again, logicians have approached the matter in various ways: some by deflating the challenge to begin with, claiming that it is vacuously and unproblematically true that *whatever will be will be*,[63] others by looking to make an appropriate change to logic (allowing truth gaps, for example), or to the way it is used (formalizing grammatical tense). The most interesting of these, for our purposes, is Lukasiewicz's three-valued logic, for he confesses to having formulated it with decidedly political considerations in mind – which shows that the political nature of the feminist approach I will describe below is not entirely novel.

Lukasiewicz was a Polish-born logician who is best remembered for having invented Polish notation, a standardized form later used (with modification) by Hewlett-Packard engineers. His solution to the problem of future contingents was to introduce a third truth-value, "indeterminate" or "neither true nor false". Lukasiewicz thought the most honest position was simply to admit that statements about the undetermined future were, determinately, *neither true nor false* (now), and should not be treated as such. But his motivation was far more complex and far-reaching than simply to salvage classical logic from this quandary. He describes himself having "declared a spiritual war upon all coercion that restricts man's free creative activity[,] *physical* [and]

[63] A. J. Ayer, *The Problem of Knowledge* (London: Macmillan, 1956), 170.

logical."[64] Finding, in Aristotelian logic, a system according to which "All that exists is subject to necessary *laws*," he is horrified that "In the universe conceived in this way there is no place for a creative act resulting not from a law but from a spontaneous impulse."

But rather than viewing logic itself as the problem, he describes his own symbolic logic as his "weapon" against the Aristotelian system.

> I have proved that in addition to true and false propositions there are *possible* propositions, to which objective possibility corresponds as a third [sic] in addition to being and non-being. That gave rise to a system of *three-valued logic*, which I worked out in detail last summer. That system is as coherent and self-consistent as Aristotle's logic, and is much richer in laws and formulae. That new logic, by introducing the concept of objective possibility, destroys the former concept of science, based on necessity. Possible phenomena have no causes, although they themselves can be the beginning of a causal sequence. An act of a creative individual can be free and at the same time affect the course of the world. The possibility of constructing different logical systems shows that logic is not restricted to reproductions of facts but is a free product of man, like a work of art. Logical coercion vanishes at its very source.[65]

Lukasiewicz first empowered himself to challenge logic, then amended it in the very ways he felt morally necessary. "Such," he describes, "was my research, its emotional background, and the objective by which it was guided."[66] He was clearly worried less about an ostensible technical problem with the standard calculus, than he was about a logic and a metaphysics that circumscribes our ability to see human beings as free. The tone here is passionately political, even conjuring a rather vivid image of the Polish World War I setting in which the words were written.

It is interesting that Lukasiewicz simply did not recognize a sharp cleavage between logic and the rest of philosophy – even so worldly a

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[64] Jan Lukasiewicz, *Selected Works*, ed. Ludwik Borkowski (Amsterdam: North-Holland, 1970), 84.
[65] Lukasiewicz, 84-86 (emphasis in original).
[66] Lukasiewicz, 86.

branch as *political* philosophy. What's more, he elaborated his views through a formal calculus, rather than via some informal principle or as an extra-logical caveat. It was his formal system, according to him, that did the work of defeating the burdensome fatalism of Aristotle's logic. And it is noteworthy that his motivation there seems to have been twofold: on the one hand, he felt that a third truth-value was needed to represent the metaphysical *fact* of possibility – similar to the way the fuzzy logician wishes to recognize the fact of vagueness in the application of predicates. On the other, Lukasiewicz felt an *ethical* compunction to acknowledge human freedom, to declare a "spiritual war" against its aspersers. Once he had done so, he then felt satisfied that what he had created was a better *logic*: "coherent and consistent" and "richer in formulae."

All in all, Lukasiewicz's comments presage the tone that feminists would later take in discussing logic, which is why he provides a useful segue. Granted, few logicians may be aware of the passages just quoted, but Lukasiewicz's logic itself continues to be studied and discussed.[67] If feminist political and ethical concerns could be translated into tangible logical challenges, perhaps the same could happen for them.

FEMINIST ONTOLOGICAL CHALLENGES

Those concerns can only be understood within the broader context of some feminist arguments about a troublesome pattern in Western philosophical thinking. Genevieve Lloyd was the first to describe how, beginning with the Greeks, the organizing conceptual categories of Western thought have been dualistic pairs, each with a favoured and disfavoured element. She harkens back to the Pythagorean table of opposites, which included "ten contrasts": "limit/unlimited, odd/even,

[67] See Graham Priest, *An Introduction to Non-Classical Logic* (Cambridge: Cambridge University Press, 2001), Chapter 7; and Greg Restall, "Lukasiewicz, Supervaluations and the Future" (forthcoming).

one/many, right/left, male/female, rest/motion, straight/curved, light/dark, good/bad, square/oblong," and points out that

> 'male' and 'female', like the other contrasted terms, did not here function as straightforwardly descriptive classifications. 'Male', like the other terms on its side of the table, was construed as superior to its opposite; and the basis for this superiority was its association with the primary Pythagorean constrast between form and formlessness.[68]

Or, as the idea was soon amended by Plato, between form and matter. The table was "an expression of values"[69] and the role played by femaleness was crucial: to absorb, be identified with, the negative side. In a twofold movement, women were both excluded from the masculine realm of form, mind, culture, reason, etc., and positively identified with the complements matter, body, nature, emotion.

In general, Lloyd and others explain, connections are taken to exist between the elements on each side of the respective sides of the dualisms. Nature is related to body (also physical), which is related to emotion; these things are impure, profane, base, limited – and belong to the notion of femininity as such: women give birth, women are sexual objects, women are emotional, women are less rational, women manipulate physical objects (food, babies, dirty laundry). Men, on the other hand, deal in ideas. "Man" participates in that which is universal – reason, the moral law, the sacred – while women remain particularized by their corporeality, unable to transcend their merely physical being. More than this, being a virtuous woman (soft, passive, sensitive) means possessing those very same qualities that make one a lesser (weaker, less active, less decisive) human.

The way in which these dichotomies operate, shaping our apprehension of the world around us, encoding value and not merely description, has

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[68] Genevieve Lloyd, *The Man of Reason: 'Male' and 'Female' in Western Philosophy* (Minneapolis, MN: University of Minnesota Press, 1984), 3.
[69] Lloyd, 103.

been described by various feminist writers. Their accounts differ, but some of them believe they have found the ultimate expression of this pattern in classical logic's A/~A.

Jay, Frye

Nancy Jay highlights three classical principles of logic, formulating each in lay terms: Identity (that "if anything is A, it is A"), Contradiction ("nothing can be both A and Not A"), and Excluded Middle ("anything, and everything, must be *either* A *or* Not-A").[70] These are the principles according to which the concept of gender, as with other "dichotomies", is organized. Clearly, says Jay, these principles don't square with the actual world, where there is constant change, contra the principle of Identity, as well as continuity, in violation of the other two – even in biological sex. This indicates that the function they really serve is not to capture the world accurately, but to organize our perceptions of it. More insidiously, especially as regards gender, they are meant to preserve a certain intellectual and social order: these are "'the solid frame which encloses all thought; [where] this does not seem to be able to liberate itself from them without destroying itself'"; hence any attempt to undermine patriarchal gender relations will plunge one into senselessness.[71]

Jay gives two general grounds for suspecting that male/female is understood by and through the logical distinction between A and not-A in accordance with the three logical principles she names. First, she describes the absoluteness of the separation between the two terms. Just as A and not-A are understood as completely and totally distinct (*necessarily* so, *logically* so), the categories of male and female are deemed mutually exclusive. They are allowed no overlap whatsoever, even though this flies in the face of the way the world actually is. In fact, it takes tremendous work it takes to maintain this categorization. Facts

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[70] Nancy Jay, "Gender and Dichotomy," *Feminist Studies* 7 (1981), 42.

[71] As to how women came by their subordinate status, Jay suggests one possibility ("Because infancy begins in undifferentiated union with the mother, separation from *her* is fundamental" Jay, 54), but ultimately does not claim to know. Of course, this is not crucial to her argument.

that disrupt the hygiene of this order (hermaphrodite-born babies, aggressive females, emotional males) are ignored. Extreme sanction and disgust are visited upon those who violate the boundary separating male and female, such as women who assume "male" roles and effeminate or homosexual men.[72] And so on. Any transcendence of the neat categorization is immediately destroyed; extensive work is done to ensure that the two poles remain distinct and separate.

Second, there is an asymmetry between the two genders, as between A and not-A. Just as not-A is defined only in terms of A (distinguishable only by the addition of the particle "not-"), the category of "woman" is derivative upon "man": woman was, for Aristotle, as for the scholastics in his wake, a degenerate or misbegotten male.[73] On a more quotidian level, women's names are often derivative of men's (Henrietta, Johanna), but never vice versa. There is also the asymmetry of the general terms "man" and "woman" – the former can stand for the latter, but not vice versa (who would even consider talking about "womankind" standing on the brink of nuclear disaster?). As a result, not-A, like "woman", is not independently specifiable; as Jay says, it has no unique "positive reality."

Even more radically, Marilyn Frye believes that the category of woman is constructed only out of a negation of masculinity, as modeled on the relationship between A and ~A. Women merely enframe the concept of masculinity, which leads Frye to suggest that there is little *duality* in this dichotomy at all: "[A]n **A/not-A** structure ... does not construct two things: there are no 'somethings' (nothing *is* anything) on the 'outside' of

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[72] Of course, homophobia is by no means reducible to sexism. It is conceivable that the system Jay describes could be coupled with a tolerance for homosexuality, or even a preference for homosexuality over heterosexuality – as perhaps in ancient Greece. Contempt for homosexuality operates above and beyond the radical separation Jay describes.

[73] Though Aristotle acknowledged that the females of species must play a role in the natural order, he also clearly viewed them as inferior: "For the female is, as it were, a mutilated male," From *On the Generation of Animals*, W.D. Ross's translation. Beverly Clack ed., *Misogyny in the Western Philosophical Tradition: A Reader* (New York: Routledge, 1999), 36.

the circle drawn around **A**"[74] – there is simply the absence of A. Frye is emphatic that women must articulate a positive, independent identity of their own.

As a result, Frye's strategy, like Jay's, is to posit a second, standalone term, to constitute an independent female presence. They turn towards the model they find to be provided by Aristotelian logic, whereby terms can be contrasted without one being construed from the subtraction of the other. Gender, they say, can be viewed as a set of contraries, rather than contradictories. Contraries are subject to the law of non-contradiction, but not to the law of excluded middle. (An example would be "red" and "white" – an object cannot be both red and white (all over), but it can also be neither. Logically speaking, in a contrary relationship, the two propositions cannot both be true, but they can both be false.) Contraries are still undeniably distinct, but neither is defined in terms of the other.

For Hass, a logic that does not rely upon a polarizing negation to formalize difference "Make[s] that arrogant **A** share the universe"[75] and solves the problem of a single, controlling subjectivity – "a subjectivity constructed in a positive finite category that is in **A:B** relations with other categories does not conceive of itself as *subjectivity* simpliciter." For Jay, the contrary A/B distinction, which allows for the addition of yet more contrary terms C/D/... ("blue", "green",...), better captures the natural continuum of sex in the natural world. A/B is not all-encompassing, does not divide the universe without remainder, but allows for other possibilities (C, D...).

Both Jay and Frye believe that A/not-A logico-ontological categorizing does more work than is necessary to differentiate between two terms, and that the extra work is what creates the hierarchy. For this reason they deem this formulation unattractive to feminists. A less oppressive

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[74] Marilyn Frye, "The Necessity of Differences: Constructing a Positive Category of Women," *Signs* 21 (1996): 999-1000
[75] Frye, 998.

conception of difference (or an *actual, robust* conception of difference, according to Frye, rather than mere reflection) can be achieved with a contrariety between two independently-specified terms.

Plumwood

Val Plumwood disagrees with both Jay and Frye. The problem is not, she says, with negation proper, nor with dichotomy (dividing into two), nor even with relationality (one term being defined in relation to another). Each of these things can be used innocently, and can even be indispensable to our ability to make sense of the world.[76] The real problem lies with *centrism*, whereby one entity in a pair becomes the sole locus of value. This is the key, identifying feature of what Plumwood calls "dualisms", her term for the binaries that Lloyd describes. Embedded in a dualism is a deliberate hierarchy and asymmetry. One term is privileged, deemed essential, used as the standard, *placed at the centre* – and the other measured against it. The crux of Plumwood's argument then becomes that only *some* forms of logical negation are centrist.

Plumwood's concern is the mechanism by which the right side of the Pythagorean table becomes the locus of *value*: woman and the characteristics with which she is associated are devalued because they are measured against the standards set by the other side. Man/form/reason/straight/rest are perfections, and women, *qua* women, are imperfect because they are not these things. The real problem with women being identified as not-men was, all along, that *man was the site of value.*

What then? It won't do simply to reverse the valuation of the opposing poles, says Plumwood, since this just serves to perpetuate some (other) form of oppression. The problem, after all, lies not with the fact that

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[76] Val Plumwood, "Feminism and the Logic of Alterity," in Falmagne and Hass, 52-55.

women are oppressed, but that *anyone* is. Nor is it possible to equalize value between the two sides, since it is built into the very logic of a dualism that one side is privileged over the other. (In this, she disagrees with the "externalists", who insist that the problems feminists have identified lie outside the scope of logic itself, and must strictly pertain to manipulations of content.) To show how this is a matter of logic, Plumwood delves into the classical system.

She enumerates a number of ways in which elements and patterns can be seen in classical logic which reinforce dualistic thinking: ~A is specified in relation to A, and *not* vice versa. ~A has no independent, positive specification, but is an undifferentiated "other" to A. A is at the centre; ~A is its homogenized background. All of these features echo elements of the patriarchal oppression of women: the fact that their status and identity is derivative upon men's ("Mrs. John Smith"); and that their unique contributions are usually denied (Aristotle's idea that children are "informed" by their fathers alone;[77] the persistent idea that stay-at-home mothers are unemployed). In addition, A and ~A are maximally distinct, in a relationship of radical exclusion, where the "penalty of merger" is as high as it can be – system collapse (positing both terms at once constitutes a contradiction, from which anything follows). This creates a concept of difference whereby one entity must "win out" over the other.

The simplicity of classical logic has come at the cost of narrowing the concept of otherness to a mere background or foil.

> [I]t is always simpler to represent a monological system in comparison to a dialogical one... If we think of *p* and its negation as debate partners, what emerges from a debate between *p* and its classically conceived partner is a kind of monologue, because a classical proposition completely controls and determines its negation or other, delineating a monological logic that allows a proposition to swallow up the difference its negation represents and push it into

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77 "[T]he contribution of the female to the generative product is not the same as that of the male, but the male contributes the principle of movement and the female the material." Clack, 33.

the role of being background to its foreground.[78]

Difference becomes a unidimensional idea of reversal, and ever involves a struggle for supremacy.

Logic encodes the very centeredness Plumwood identifies as the culprit in dualistic constructions. She does not think that classical logic is solely *responsible* for the dualistic understanding of gender. "This way of being construed as other... corresponds closely to the features of classical logic, but not to the principles of logic *per se*."[79] Rather, she describes the relationship between logic and ontology or other philosophy as akin to that between technology and forms of socio-economic organization, where there is a mechanism of reciprocal selection, and mutual reinforcement at work.[80] The impetus for criticizing logic is that "For feminists and others to abandon selective engagement with logic would be to mount a very incomplete challenge to hierarchical thinking".[81]

Seredipitously, negation "is the key axis of comparison among implicational systems" and Plumwood goes on to determine that relevance logic, for its handling of the operator, is preferable to the classical system in its representations of otherness. In relevant negation, that which A leaves behind is not an undifferentiated plenum, but a universe structured in itself. Positive conceptions of otherness are allowed for by the fact that not-A is independently specifiable.[82] Difference is represented by the fact that negation can be context-sensitive, scoping out a particular alternative to some A rather than the entire rest of the universe. Radical exclusion is avoided by the fact that A and not-A can be united without inducing system collapse.[83]

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[78] Plumwood, 63.
[79] Val Plumwood, "The Politics of Reason: Toward a Feminist Logic," in Falmagne and Hass, 30.
[80] Plumwood, "The Politics of Reason," 18.
[81] Plumwood, "The Politics of Reason," 37.
[82] Plumwood, "Feminism and the Logic of Alterity," 65.
[83] Plumwood elsewhere stipulates the truth conditions for negated sentences in relevance logic as follows:

$I(\sim A, a) = \textit{true}$ iff $I(A, a^*) = \textit{false}$

As an already "deviant" logician, it occurs to her to look elsewhere within modern symbolic logic for an alternative: "[The latter] presents us with a multiplicity of significantly different negations, only some of which are plausible candidates for oppressive otherness interpretations."[84] The mistake made by both Jay and Frye on the one hand, and the externalists on the other, is a "failure to appreciate the multiplicity of logics and negations"[85] available for symbolizing.

Having already published articles in support of relevance logic, Plumwood incurs reproach from Haack for conveniently using feminist charges to support her preexisting logical agenda.[86] But this arguably just assumes the externalist viewpoint Plumwood eschews – the idea that one's logical and political agendas are separate to begin with. Plumwood could plausibly respond that her feminist convictions are what helped her form her logic from the get-go.

In fact, this argument would tally with Haack's own pragmatist conception of logic

> according to which logic is a theory, a theory on a par, except for its extreme generality, with other, 'scientific' theories; and according to which choice of logic, as of other theories, is to be made on the basis of an assessment of the economy, coherence and simplicity of the overall belief set.[87]

The mention of coherence and simplicity opens the door for revising logic in the light of (possibly feminist) lessons gleaned elsewhere.

Interpreting the * as referring to compatibility, this says that "~A is true at [a world] a if A's being true is somehow incompatible with the other information contained at a." (So a* is the world, or scenario, that is maximally compatible with a.) Edwin D. Mares and Robert K. Meyer, "Relevant Logics," in Goble, 286-290.

[84] Plumwood, "Feminism and the Logic of Alterity," 62.

[85] Plumwood, "Feminism and the Logic of Alterity," 62.

[86] "Plumwood's theme ... that feminism requires, not that we abandon logic altogether, but that we adopt a non-standard, feminist logic in place of the classical ... will not sound unfamiliar to readers of the literature of relevant logic, Australian style." Haack, xv – xvi.

[87] Haack, 26.

Plumwood might easily cite this type of motivation when defending her partiality towards relevance logic: "As a feminist, I object to the privileging of a single term to the anonymization of all else. So I will reject this as a logician as well."

Even when treating them as ingenuous, however, not everyone will be impressed by Plumwood's arguments. The most likely response will be that the beauty of classical logic lies in the fact that it doesn't say anything about how its variables are to be instantiated. A can just as well denote "woman" as "man". And it does not posit a *logical* relationship between male and female at all. "Woman" is no more "not-man" than is "table", "bowling pin", or "the King of France." Koertge elaborates:

> Many lay criticisms of the law of excluded middle are based on a crude confusion between contraries and contradictories. The law does *not* claim that everything is either black or white and that there are no shades of gray. What it *does* say is that everything is either black or not-black, white or not-white, gray or not-gray. Aristotle's logic does not rule out the possibility of hermaphrodites, lukewarm baths, or wars which end with no victor.[88]

Jay and Frye would respond that their very point about logic is that it causes gender to be conceived as an opposition between man and not-man; woman simply *is* that negation of man. They don't claim that logic surreptitiously tries to make statements about things in the world, or that it requires that its symbols be instantiated in a certain way. What they are concerned about is the reduction of all difference to a sharp, polarizing negation, in both logic and social ontology. They are right to point out that there are startling similarities between the way that LEM and LNC divide the world without remainder, and the way dichotomies (or, per Plumwood: dualisms) bifurcate; between the simplicity and interpretability of the single term A, and the derivative and dependent not-A; between the logical impossibility of blurring the boundaries between A and not-A and the violence that is employed to ensure that

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[88] Noretta Koertge, "The Feminist Critique [Repudiation] of Logic, http://www.indiana.edu/~koertge/rfemlog.html

nothing and no one is allowed to blur the distinction between masculinity and femininity. It is not outrageous to suggest that this simply is not coincidence.

Koertge could again maintain that identifying man with A and woman with not-A is still just a misuse of classical negation (and what follows – insisting that everything is either male or female but never both or neither – is just patently false). Plumwood's analysis proves more resilient to this externalist line of criticism, however, for it culminates in the assertion that the problem cannot be solved simply by putting something else ("hermaphrodite", "lukewarm bath", "woman") in the place of A. This would be tantamount to electing a new oppressor: "although any proposition can occupy the primary role, once this is set the behaviour of its negation is completely determined."[89] Sure, p can be anything, but once it is specified, not-p simply dissipates into a bleary background. The real problem is the monological discursive practice of classical logic, its inability to countenance a challenge to p (another proposition entirely may not challenge it at all; acknowledging ~p results in system collapse). Its simplicity hurts more than it helps: indiscriminatingly reducing otherness to polarizing negation, meaning to truth-value. A logic that makes these mistakes cannot serve as a good guide for inferential practice. As Jay puts it, "if you congeal the world in order to clarify it, you lose more than you gain."[90]

But another counterargument to Plumwood's critique might be that, strictly speaking, logic doesn't disallow subtler and more gradual notions of difference; it simply doesn't represent them symbolically. This point is taken up more thoroughly by Hass and Irigaray.

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89 Plumwood, "Feminism and the Logic of Alterity," 63.
90 Jay, 51.

Hass/Irigaray

Like Plumwood, Marjorie Hass also problematizes the feminist (re)turn to Aristotelian contraries to express an independent feminine Other. She offers reasons why it, too, is unsuitable for representing non-hierarchical difference. For one thing, the fact that "man" and "woman" were, for Aristotle, contraries rather than contradictories did not prevent him from viewing women as naturally subordinate to men.[91] But her main concern is that none of the Aristotelian forms of negation is able to capture the robust notion of difference that feminists and philosophers of difference are trying to put forward.

It is one akin to the notions of difference found in various areas of contemporary Continental thought, from Levinas's ethical description of the other, to Lévi-Strauss's description of the origins of culture and knowledge, to de Saussure's account of how signs operate in a language. In each of these philosophies, difference is not something troublesome, something to be explained away, but fundamental and ineradicable – it is what gets the various economies described (ethical/ cultural/ linguistic) off the ground. Recognizing an ineradicable, incommensurable difference at some point, in each of these philosophies, assumes a solemn metaphysical and political significance.

Hass draws primarily from Luce Irigaray, who locates the *fact* of genuine, unassimilable difference, first and foremost, in sex. But she detects, in the dominant, masculine "imaginary",[92] as in the philosophy it produces, an attempt to do away with that difference. Driven by the

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[91] "A husband and father, we saw, rules over wife and children... the rule over his wife [being] a constitutional one... the male is by nature fitter for command than the female... the courage of a man is shown in commanding, of a woman in obeying." From *Politics*, W. D. Ross's translation. Clack, 42-43.

[92] Irigaray imports this term from psychoanalysis, specifically that of Lacan, where it denotes the earliest developmental state of the mind – the one inhabited by the infant, before it has learned to grasp things on a *symbolic* level. It thus refers, in a way, to the fundamental features/inclinations/tendencies of the imagination, prior to the self-conscious formulation of *ideas* using symbols (i.e., words). It is one's first (chronologically, and experientially) mode of contact with the world around one.

desire for unity, simplicity, consistency, and dominance, the male imaginary fears encountering an incommensurable feminine "other" that might dislodge the hegemony of its own account of, and place in, the world.

As a result, the only "difference" describable by the dominant imaginary is the one that results from mere reflection – a mirroring of the same. The Other is the negation of the One (which makes it conceptually empty, really, and which attaches to it the stigma of being the *marked* case). The "phallocentric drama" of Western philosophy consists in always reducing the other to a mirroring of the self. Femininity has always been defined *for* women in ways that merely reverse the image of masculinity (this is true in anatomy, in psychoanalysis, in anthropology), and that serve to satisfy the latter's desires: it is, in brief, "never to be identified except by and for the masculine".[93]

> '[F]emininity' is a role, an image, a value, imposed upon women by male systems of representation. In this masquerade of femininity, the woman loses herself, and loses herself by playing on her femininity[94]

- by becoming, in other words, simply what men want her to be. What women can, however, claim as their own – and that in which they can vest their sense of identity – are the ways in which they fail to fit the image that is projected upon them. It is a recovery that occurs "fragmentarily, in the little-structured margins of a dominant ideology, as waste, or excess, what is left ...".[95] These "slippages" or "disruptive excesses" put the lie to the phallocratric system of representation, by threatening its claims about uniformity, universality, consistency, and therefore might even serve as the starting-point from which to bring about something else...

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93 Luce Irigaray, *This Sex Which is Not One*, trans. Catherine Porter (Ithaca: Cornell University Press, 1985), 85.
94 Irigaray, *This Sex Which is Not One*, 84.
95 Irigaray, *This Sex Which is Not One*, 30.

The project, therefore, for feminism as for philosophy, is to attempt to somehow illuminate and describe that disruptive excess, to allow femininity to speak for itself and somehow be countenanced in the system of representation (if only by *allowing* for that disruption), to being to articulate a new cultural imaginary, in order to precipitate a non-reductive, non-exploitative encounter with a genuine *Other*. This will be explored further in Chapter 3.

Turning towards classical logic, Irigaray explores what *it* is unable or unwilling to symbolize. She notes that its marker of difference, negation, represents only commensurable difference: A is equivalent to ~~A, ~A to ~~~A, etc. Alternating between one and the other marks only a "quantitative" difference, rather than a qualitative one, since once A is understood, so is not-A. (One might phrase this in terms of truth-values: the difference between true and false is only quantitative, since they can be defined reciprocally.) Moreover, a hierarchy exists between the two, since "one is always better (truer) than the other."[96]

Unlike Jay, Irigaray does not believe in turning to contrariety to replace contradictoriness. Jay believes that the dichotomies she criticizes can be unraveled by the reconceptualization of gender as fluid, passing gradually from male to female, empirically including hermaphroditism, the occasional appearance of three sex chromosomes in an individual, the varying presence of sex hormones, etc. For her part, Irigaray doesn't believe the problem will be solved simply by "multiplying the poles of difference" – she is more interested in working out the difficulties confronting the couple. She wants to counterpose two genuinely different sexes, to precipitate that encounter, not diffuse it. First, because she thinks there is something fundamental – something politically *and* ontologically significant – about the meeting of two incommensurable beings, and second, because otherwise the problem of

[96] Marjorie Hass, "Feminist Readings of Aristotelian Logic," in *Feminist Interpretations of Aristotle*, Cynthia A. Freeland, ed. (University Park, PA: The Pennsylvania State University Press, 1998), 32.

hierarchy is simply evaded (temporarily) by diffusing identities, rather than replaced with another mode of encounter.[97]

What Irigaray, and following her lead, Hass, propose as a substitute for classical negation is the concept of limit. A limit or boundary marks a relationship between two entities that are not interchangeable. It presupposes that *two* things are in existence, and that one is *not* merely generated as the mirror image or opposite of the other. Two poles of identity exist at once, which are not interdefinable and whose positions are not reversible. They exist side by side, and, significantly, are not related in a hierarchy – "neither of these poles is meant to overpower the other."[98]

This forces us to recognize an independent, positive content to each of the poles, and yet Hass believes that the notion of limit can capture *negation* as well as mere difference. She imagines "link[ing] the pure affirmative presence of difference with the more clearly negative relation of opposition."[99] A boundary separates two distinct poles of identity, yet manages to capture negation by assigning a territory to each, and a territory *un*occupied by each. If the two entities form a couple, one can constitute the negation of the other, in the modified sense of a significant absence – without reducing the other to a mirror image of, or residue left behind by, the one. A limit represents possibility, an "opening onto something else," which belies the omnipresence or universality of the one, and indicates a unique and distinct other. In this way it motion towards what the one is *not*.[100]

This conceptualization seems to violate the standard perception that content is distinguishable from form, and that logic attends solely to the

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[97] See Luce Irigaray, *Democracy Begins Between Two*, trans. Kirsteen Anderson (New York: Routledge, 2001).
[98] Marjorie Hass, "Fluid Thinking: Irigaray's Critique of Formal Logic," in Falmagne and Hass, 78-79.
[99] Marjorie Hass, "Negation and Difference," *Society for Phenomenology and Existential Philosophy* Supplement (2000), 116.
[100] Hass, "Negation and Difference," 116-117

latter. Are Hass and Irigaray suggesting that this idea of limit is, or could be, a *logical* relationship? Irigaray would indeed like to see it symbolized. She questions why the asymmetrical notion of difference is privileged by being the only one enshrined formally, and suspects that this is merely an exercize of the prerogative of the male imaginary.

Hass believes that Irigaray's assessment of logic fits well with the standard ontological critiques: "[Her] claims about formal logic are analogous to those offered by quantum or intuitionist logicians. In each case, a situation is uncovered that is claimed to have a structure that is not isomorphic to the structure of the standard symbolic logic."[101] What Irigaray finds to be non-isomorphic to classical logic is (true) sexual difference – an irreducible difference between two incommensurable beings, each independently specifiable. Like the quantum or intuitionist logicians, however, this does not lead her to reject logic out of hand, but to ask for a reformulation or expansion – something to accommodate that which logic cannot yet represent. Hass sees her "as calling for new, other, ways of speaking logic that might perhaps uncover those 'trivalent or polyvalent theories that still appear to be marginal.'"[102] Like Plumwood, Irigaray chooses not to eschew logic altogether, and she can be read in this passage as gesturing towards exploring non-classical alternatives in the name of feminism.

In fact, in Irigaray's analysis, like in Plumwood's or Lukasiewicz's, the task ahead is critical, and one in which the logical dimension cannot be, and *ought not to be*, disentangled from the political:

> Rethinking logical negation as both otherness and fluid difference, then, becomes part of a project of transformation that will ultimately allow for women's equality and the emergence of a reciprocal relation between women and men.[103]

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[101] Hass, "Fluid Thinking," 80.
[102] Irigaray, quoted in Hass, "Feminist Readings of Aristotelian Logic," 33.
[103] Hass, "Feminist Readings of Aristotelian Logic," 33.

CONCLUSION

Not everyone is convinced by any of the ontologically-based arguments against classical logic. Many contend that neither vagueness, nor future contingents nor quantum physics necessitates a rejection of classical logic. In the same vein, some may reject these feminist challenges out of hand.

But all of the arguments in favour of retaining classical logic have been met with counter-arguments by alternative logicians. The debate rages on. At least as much work is produced detailing deviant systems as is deflating or deflecting the thorny issues of vagueness, etc. It is hard to say where the onus really lies – on the defenders of classical logic, to make the case for its retention, or on its attackers, to make the case for its replacement.

The lesson to be drawn is that the groundbreaking work of Jay and Frye, of Plumwood, and of Hass and Irigray deserves to be countenanced alongside Quine's, von Neumann's, and Lukasiewicz's in the assessment of ontological challenges to classical logic. Irigaray, Hass and Plumwood especially have shown that yes, feminism has plenty to say about logic, and their suggestions, which go a long way towards engaging with logic on its own terms, deserve to be encountered, with solemnity, by logicians.

Chapter 3

Logic and Language

There is another facet of logic that feminists have a stake in, which has already begun to be articulated. That is in its status as a language. Logic is, after all, not just describable as a set of rules for making proofs; it is also a formal system of representation, with a complete, functioning syntax and semantics. As such, we can ask certain things about it: what kind of language is it? What are its mechanisms of representation? How does it relate to the world, and how does it create meaning(ful phrases)? Most acutely, what relationship is perceived to exist between logic as a formal language and the types of languages with which we are familiar – namely, "natural" languages such as English, French, Cantonese, or Arabic? What can one tell us about the other?

It turns out that there is much for feminists to say about all of this. First, as Nye points out, the very issues that interest feminists with respect to language (the locus of discursive power or authority; the purposes to which language lends itself; latent or embedded sexism in terminology) seem to disappear with the formal calculus. This is no comfort to those suspicious of pretensions to neutrality, and the fact that logic – (seemingly) immune as it is from any consideration of the social – is described as the ideal language is therefore rather disquieting. Second, as Irigaray notes, the mechanisms by which language is said to operate – which are revealed most starkly in talk of formal semantics – exclude representation of, and by, the feminine.

After these scathing indictments of how logic functions as a language, however, Sheman offers a way to yet again bring feminism and logic in closer dialogue.

THE TECHNICAL VIEW

Natural languages possess a number of features that would seem to make the task of distilling meaning rather difficult. To a non-native speaker, a language can appear remarkably inconsistent, intimidatingly variegated, and littered with exceptions, nuances and idioms. Translating a natural language into a formal propositional system, as students of logic soon learn, is never a matter of applying a single determinate procedure.

The features of natural language that make it difficult to pin down, and which present thorny problems for the interpreter, are many. One, as we saw in Chapter 2, is vagueness. Another is context-dependence: the truth-value of many sentences of English depends on the time and place at which they are uttered, and by whom. For example, "I am hungry" will be true on some occasions in which I might utter it, false on others, but true on those same occasions if uttered by someone else. For this reason, philosophers of language have drawn a distinction between sentence types (particular strings of words, such as the one just cited) and sentence tokens (individual utterances thereof).

A less tractable problem has involved accounting for vast differences in meaning among superficially similar sentences. This can operate at the level of vocabulary (the ambiguity of homonyms such as "bow", "spirit", "court") or at the level of grammar, as these examples illustrate.

(1) The amphiboly:
Teacher strikes idle kids

(2) The validity of:

> That dog is a mutt, that dog is yours, so that dog is your mutt.

Versus the invalidity of:

> That dog is a father, that dog is yours, so that dog is your father[104]

(3) The diversity of sentence subjects:

> "Who did you pass on the road?" the King went on, holding out his hand to the Messenger for some more hay.
> "Nobody", said the Messenger.
> "Quite right", said the King: "this young lady saw him too. So of course Nobody walks slower than you.
> "I do my best", the messenger said in a sullen tone. "I'm sure nobody walks much faster than I do!"
> "He can't do that", said the King, "or else he'd have been here first."[105]

Of course, in the extreme, sentences even can subvert their own literal meaning, as with exaggeration, sarcasm, humour, irony, and metaphor. Add to this the fact that not all speech occurs in the indicative mode ("X is Y"), and the theorist of language faces a mess of complications.

In their attempt to grapple with these difficulties, philosophers of language advancing what I will call, for the purposes of making comparisons later on, the "technical" view, have tried to make a number of simplifications. First, the scope of interest has usually been limited to serious, literal expressions in the indicative mode. More controversially, the idea of a proposition has been created – a non-tensed, unambiguous formulation, where indexicals have been replaced with rigid designators, and other context-dependence allegedly eliminated. This entity is taken to underlie the spoken sentence, or to be that to which the sentence refers. It captures the sentence's meaning, is stable, and is the type of thing of which truth and falsity can be predicated.

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[104] Paul Pietroski, "Logical Form", *The Stanford Encyclopedia of Philosophy (Spring 2005 Edition)*, ed. Edward N. Zalta, URL: http://plato.stanford.edu/archives/spr2005/entries/logical-form/

[105] Lewis Carroll quoted in Mark Sainsbury, *Logical Forms: An Introduction to Philosophical Logic*, 2nd ed. (Malden, MA: Blackwell, 2001), 49-50.

The motivation here is fairly straightforward. It would seem to complicate language beyond comprehension if every different sentence asserted a whole new idea. Propositions are a common point of reference that dispenses with the incidental features of utterances, such as the vernacular in which they are said, or the particular things that are available at the time available to be referred to indexically.

But there are odd things about this view, or at least the ways in which it is subscribed to. First, propositions seem to be quietly reified, described as though they were in a sense already there, waiting to be discovered, perhaps camouflaged by the sentence-vehicles. Thus, Russell's treatment of definite descriptions describes the existentially quantified form as what we meant all along, perhaps without realizing it: sentences such as "The King of France is bald" *seem* to be subject-predicate statements, but really they are statements, first, about the existence of a current King of France, and second, that that individual is bald.[106] It is suggested that in order to understand what is really at stake in the English sentence, we need to *uncover* this logical form. Once we do, we see that the sentence is "plainly false".

We can contrast this attitude towards propositions with the idea that logical constructions are merely a prism through which we view language, or a projection we make onto it. Jaroslav Peregrin points out that whether or not a given projection fits with the actual world (or vice versa) is beyond formal proof: it cannot be established with the tools internal to that projected system.[107] So, establishing that the existentially-quantified formalization of a definite description sentence works better as far *as the logic is concerned* is one thing (perhaps it is consistent with other features we hold dear); showing that the natural language sentence demanded this treatment all along, however, is quite

[106] Bertrand Russell, "On Denoting," *Mind* 14 (1905): 479-493.
[107] Jaroslav Peregrin, "The Natural and the Formal," *Journal of Philosophical Logic* 29 (2000): 75-101.

another. Russell's attitude seems to be one of "problem solved" rather than "here is a useful projection."[108]

Second, and related to the reification of propositions, is the assumption of univocality. Language is taken to primarily serve the purpose of describing states of affairs in the world, and having a single or ultimate discoverable meaning is deemed crucial to analyzing sentences, especially logically. Meaning is Platonized – is deemed an objective matter, discoverable by anyone willing (and properly qualified) to look. This attitude is especially evident in the early Wittgenstein's *Tractatus Logico-Philosophicus*, according to which the world, and propositions about it, must share some sort of underlying logical structure in order for the latter to refer (and be true or false). Names pick out objects and propositions describe facts or states of affairs in the world, with the latter constituting the meaning of the former in both cases. Differences between natural languages are only superficial – what matters is that they all partake of a single underlying logical form.

So, just as the conventional view of logic described in the first chapter holds that there can be only one true logic, the technical view assumes that language has a single determinable essence, and in particular that every sentence can have only one underlying logical form. The goals of the technical view, then, are to get down to the business of (a) pinning down meaning, and (b) assessing truth (so that logic can then determine implication). Once these goals, conceived in this way, are adopted, a certain conception of language emerges. Propositions seem in some way superior to the natural language expressions themselves, insofar as they are clearer, more straightforward, and directly subject to logical treatment. True, there is no pretension that natural languages should be replaced with a superior formal one, or that any formal language could do everything a natural language can. After all, humour, tone, and emotion are still a part of human communication. But there is a subtler

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[108] "This clears up two millennia of middle-headedness about 'existence', beginning with Plato's *Theaetetus*." Bertrand Russell, *History of Western Philosophy* (New York: Routledge, 1996), 740.

idea that the paradigm of the truth-evaluable, unambiguous, indicative, subject-predicate form explains the efficacy or the essence of language (or that it captures the relevant common features of all languages, including (as equals) machine languages, natural languages, and formal logics). Decisions about what is relevant or essential in human language are disguised as mere clarifications, with scant justification ever given as to why so much is set aside.

What is implied by treating *logic* as an ideal language (even in the less normative sense of "ideal") is that things like vagueness, ambiguity, contextuality and shift are only incidental to language *per se*. The formal language has eliminated the messiness, the unevenness, the vagaries of ordinary speech to clear the path for the strict meaning of the proposition – the type of thing of which truth or falsity could be (permanently) predicated. This paring down is necessary for the logical system to do its work. There must be a single proposition behind a sentence, if we are to be able to use logic to evaluate arguments expressed in natural language. And propositions must have a fixed truth-value, in order for our evaluations of implication to be final. It would seem discomfiting and destabilizing if those values were allowed to change over time.[109] In first-order logic, domains are set, and within them, predicates have stable extensions. Time, and the change it brings, is not taken into account, sentences are un-tensed, flux and flow are bracketed off. The goal is to simplify, stabilize, de-contextualize and generally reduce the chatter of multiple voices, multiple meanings, and to sort out the strictest interpretation possible.

It is for this reason that feminists such as Nye and Irigaray have accused linguists and logicians of trying to study language *as though it were dead*. Says Nye: "all that is left of language is a kind of fossil, the

[109] Obviously, the fact that events occur which change the state of things in the world is taken into account - the sentence "Mary is an undergraduate" must obviously be allowed to change in value to take into account the progress she hopefully makes in her studies. But the proposition that is taken to underlie that sentence will have pinned it down temporally so that it refers to the time and place in which it is true and the specific individual about which it is true.

meaningless remains of actual living speech studied for formal patterns rather than as a clue to the life that once gave it shape."[110] Julia Kristeva, another continental feminist philosopher of language, bluntly asserts that "our philosophies of Language, embodiments of the Idea, are nothing more than the thoughts of archivists, archaeologists, and necrophiliacs".[111] The logical/technical view of language paints an awkward picture of a rigid, "silent" language these feminists find inaccurate and which they believe conceals a political and intellectual agenda. Let us explore Nye's and Irigaray's analyses further. Then, we can examine how the relationship between logic and natural language might be handled differently if language were viewed as organic, and embedded in other human processes.

FEMINIST RESPONSES: WHOSE LANGUAGE?

Irigaray

Irigaray's position is that language is consummated as a rejection of the feminine.

Those things by which language is identified are precisely the features associated with masculinity – stability, unity or simplicity, idea, form – and disaffiliated from femininity. The idea that a single *logos* or essence underlies all language is set against the particularities of accent, dialect, rhythm, shape, tone. The emphasis, as outlined above, is on simplicity and stability: there is a *single* logical grammar underlying all natural languages; difference is inessential and eliminable; it is because of stability or sameness that language is able to operate (different sentences express the *same* proposition; arguments with the *same* logical form

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[110] Andrea Nye, "The Voice of the Serpent: French Feminism and Philosophy of Language," in *Women, Knowledge, and Reality: Explorations in Feminist Philosophy*, edited by Ann Garry and Marilyn Pearsall (Boston: Unwin Hyman, 1989), 245.

[111] Julia Kristeva, *Revolution in Poetic Language* trans. Margaret Waller (New York: Columbia University Press, 1984), 13.

have the *same* value; different people mean the *same* thing; the listener hears the *same* thing the speaker says).

Emotion has been banished, as has corporeality. The interplay of a speaker and a listener has disappeared. Sentences, too specific and enmattered, have been supplanted by propositions.

All of this leaves behind woman – the *concept* of woman – relegated as it/she is to the realm of the emotion, corporeality, and the particular. Women are, as I described in the section on binaries, constitutionally associated with these elements, even defined by them. This is precisely where "woman", as concept, is to be found; these ideas are what give femininity its content.

To some extent, Irigaray says, these conventional depictions of language are delusive manipulations and not *really* true of language at all – after all, words are always, only ever, inscribed in marks on a page, or sounds from a mouth. Of course language is in some measure corporeal.[112] But at the same time, these ideas *about* language shape what language *is*; they direct how it can be used, constrain what can be represented in it at all. The "discourse on discourse" reveals what is already happening at the level of the spoken word.

Constitutionally excluded as she is, woman, says Irigaray, cannot articulate herself in language – both in the sense that she cannot formulate an authentic representation of herself within it, and in the sense that she cannot use language to express *her* desires, *her* imagination, *her* trains of thought. On the first count, woman, as such, cannot be encountered in language because she lies outside of the symbolic order. She has been left behind in the realm of "the real", as

[112] Just how corporeal language is, and how linguistic the body is, is a matter of interesting scholarship. See Judith Butler, *Bodies that Matter: On the Discursive Limits of "Sex"* (New York: Routledge, 1993) or Nancy Nyquist Potter, "Commodity/Body/Sign: Borderline Personality Disorder and the Signification of Self-Injurious Behaviour" *Philosophy, Psychiatry, and Psychology* 10 (2003): 1-16.

Lacan calls it – the pre-discursive or extra-linguistic *stuff* (matter? Being?). In a way, this explains why all that can therefore ever be said about her is arbitrary, a crude caricature. As Frye and Lloyd noted above, onto her are projected those things man disavows about himself. Woman is the imprint left behind by the concept of "man" – that which man is not. In herself, she is a nothingness, an absence, a negation-of, which, naturally, cannot itself be encountered. It follows, says Irigaray, that in the symbolic system, "The masculine can look at itself, speculate about itself, represent itself and describe itself for what it is, whilst the feminine ... cannot describe itself from outside or in formal terms, except by identifying itself with the masculine, thus by losing itself."[113] (To put this in the language of Chapter 2: women, as women, are specified by the "not-". If they wish to reclaim a *positive* identity or subjectivity, they concepts that are available to them are only those ones that are already masculine. So, women can be the A (perhaps), or they can be nothing at all.)

This is a sociological point as well as a *logical* one. On the sociological or cultural level (i.e., as a wry observation of fact), any of the things that we attach to being human, which women might want to say about themselves, are thoroughly infused with masculinity. Language is the articulation of subjectivity and rationality. Women cannot be subjects because they are already constituted as the *Other* or object counterposed to the masculine subject (viz., "the subject" *tout court*)[114] – they are the receptacle of all that man disavows about himself in articulating his own subjectivity: embodiment, particularity, etc. Neither can women be rational, since they cannot detach themselves from the world. Again, these are not stereotypes or statements about women's abilities. They are meant as a conceptual analysis of the very groundwork of the concepts of language, subjectivity, rationality, and woman.

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[113] "Women's Exile: Interview with Luce Irigaray," trans. Couze Venn in *The Feminist Critique of Language: A Reader*, ed. Deborah Cameron (New York: Routledge, 1990), 84.
[114] Frye, op cit.

So, women can't simply affirm these properties for themselves, since they were formulated to exclude them – doing so would merely make women (settle for being) men. But neither can they embrace the silly caricature attributed to them, which they *know* to be unjust and inaccurate. Irigaray will *only* locate the feminine in the slippage or excess that escapes that caricature. But, to even try to capture this as a single, determinable essence would destroy its subversive power and undermine what it really consists in – not to mention to succumb to the male imaginary's demand to fix, isolate, immobilize concepts.[115] So, *logically*, attempting to capture femininity or female identity would be self-defeating and misguided.

On the second count (the idea that women cannot use language to express what they mean to say), Irigaray contends that the masculine imaginary is inscribed in the very rules or mechanisms through which language operates. How this implicates classical logic was described in the previous chapter. It is also related to the idea that no robust envisioning of female pleasure is possible in the phallocentric Freudian account of sexuality, or that masculine power politics will never liberate women.[116] Where the linguistic is concerned, it means that women aren't *at home* in language. The touchstones of symbolic significance of the male imaginary – unity, stability, rigidity – have no resonance with women.

> She is indefinitely other in herself. This is doubtless why she is said to be whimsical, incomprehensible, agitated, capricious... not to mention her language, in which 'she' sets off in all directions leaving 'him' unable to discern the coherence of any meaning. Hers are contradictory words, somewhat mad from the standpoint of reason, inaudible for anyone who listens to them with ready-made grids,

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[115] See Toril Moi, *What is a Woman? and Other Essays* (Oxford: OUP, 2001) with whom, incidentally, Frye disagrees.

[116] "When women's movements challenge the forms and nature of political life the contemporary play of powers and power relations, they are in fact working toward a modification of women's status. On the other hand, when these same movements aim simply for a change in the distribution of power, leaving intact the power structure itself, then they are resubjecting themselves, deliberately or not, to a phallocratic order." Irigaray, *This Sex Which is Not One*, 81.

> with a fully elaborated code in hand. (...) One would have to listen with another ear, as if hearing *an 'other meaning' always in the process of weaving itself, of embracing itself with words, but also of getting rid of words in order not to become fixed, congealed in them.* For if 'she' says something, it is not, it is already no longer, identical with what she means. (...) It is useless, then, to trap women in the exact definition of what they mean, to make them repeat (themselves) so that it will be clear; they are already elsewhere in that discursive machinery where you expected to surprise them. (...) And if you ask them what they are thinking about, they can only reply: Nothing. Everything.[117]

Irigaray describes a non-linerarity and a non-rigidity in women's thought that is not adequately captured in language – to the extent that it shows itself, it simply looks like failed expression (unfinished, or self-contradictory, or pointless). Language does not avail itself to women speakers – but not because they are too whimsical or poetic to put together a thought. *This is symptomatic less of women than it is of the language.* It is symptomatic, specifically, of the fact that language, especially language that aspires to the virtues beheld by the technical view, is too constrained to capture the full breadth of human thought. Also of the fact that the conditions for being able to properly use a language are ones that women can't fulfil, namely full detachment and independence as a speaking subject, an aloofness from the things being described, an objective, efficient, technically-informed gaze with which to properly analyze propositions, a sense of logical certainty, etc.[118]

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[117] Irigaray, *This Sex Which is Not One*, 28-29.

[118] It is understandable for Irigaray's alarming categoricalness here to give pause. How literally are we to take what she is saying about women? There are two available interpretations: one is that what she is talking about operates at the conceptual level, and is not really meant as a comment on actual women's speech. But this does not seem to account for her tone, and the fact that she so often draws her frame of reference right back to anatomy! For this she draws the charge of essentialism, and indeed the second way of interpreting her is to let the charge stick. But this doesn't capture her emphasis on social construction: that what Freud, Lacan, etc. *miss* is that their descriptions of women, though literally quite accurate, stop just short of the most interesting question: *Why* are women like this? *Why* are they so thoroughly alienated and excluded from (full) subjectivity or language? Is it that they, by their very nature, are incapable of participating in culture or language? Or is it that culture and language have deliberately been built outside of their reach.

The best way to see this is to look at the "discourse on discourse",[119] as Irigaray calls it. The philosophy of language reveals how language is supposed to work: the technical view (and the formal language to which it gives birth) requires determinacy, linearity, univocality, rigidity. The stereotype of women's speech *as such* is whimsy, caprice, etc. The only place that it can be slotted into the technical understanding is in some unflattering "left-over" category: contradiction, babble, maybe poetry. The *account* of the system of representation reveals the values that are encoded within it. What is valued in our language, and required in the formal language, are the traits of masculinity.

The idea of an unchanging *logos* independent of bodies, speakers, motives, or psyches, echoes the masculine imaginary. But "neutrality" is achieved in the discourse on discourse when it declares itself to be talking about *all* of language – all that is relevant or important about all languages. Man makes himself universal by making himself invisible: there is, after all, nothing in particular to say about the way that *men* use language. Nothing there needs qualification, but instead disappears seamlessly into the idea of language itself.

Irigaray doesn't believe the solution to be constructing a univocal female language alongside this one – this would, after all, just constitute another version of essentially the same thing. By the very attempt to be univocal enough to be solid, determinate, and identifiable, it would end up enacting the same goals. (And logistically, from what ground could it possibly depart if not the very language women have inherited? The mechanisms by which certainty is achieved in our language are precisely the ones that eradicate the feminine.)

The fertile ground from which to subvert language *is* the chaos, instability, whimsy in which women (or *W*oman) are (is) at home. Women's experience

[119] Irigaray, *This Sex Which is Not One*, 74.

> is multiple, devoid of causes, meanings, simple qualities. Yet it cannot be decomposed. These movements cannot be described as the passage from a beginning to an end. These rivers flow into no single, definitive sea. These streams are without fixed banks, this body without fixed boundaries. This unceasing mobility. This life – which will perhaps be called our restlessness, whims, pretenses, or lies. All this remains very strange to anyone claiming to stand on solid ground. Speak, all the same. Between us, 'hardness' isn't necessary. We know the contours of our bodies well enough to love fluidity. Our density can do without trenchancy or rigidity.[120]

The strategy that women should adopt should be, precisely, to disrupt: "jamming the theoretical machinery itself... signify[ing] that with respect to this logic a *disruptive excess* is possible on the feminine side."[121] Women can subvert this domination by not being defined by it, they can vocalize, insinuate, remind of that which "upsets the linearity of a project... [and] disconcerts fidelity to a single discourse."[122] They can begin to make their presence felt by dwelling on/in those fragmentary places where (real) femininity is located.

It is all the more interesting, at this point, to recall that, critical as she is of the idea of holding formal logic up as a model for language, Irigaray is not dismissive of logic altogether. Irigaray is still interested in the debate between logical systems. She does not, however, believe in reducing language in the way the technical view has done. Whether she believes the best strategy to be finding ways of incorporating these alternative, disruptive patterns of "feminine" thought into the formal system, or to be simply not denigrating them in favour of cleaner, stricter formulations, is an open question. We will speculate further about her perception of the relationship between logic and language later in the chapter.

In the meantime, let us look at another feminist critique of the technical view and logic's place in it.

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[120] Irigaray, *This Sex Which is Not One*, 215.
[121] Irigaray, *This Sex Which is Not One*, 78 (emphasis in original).
[122] Irigaray, *This Sex Which is Not One*, 30.

Nye also takes note of what is jettisoned from language in the formal system. She finds that (putative) logical form is privileged over the other materials and modalities that make up a sentence, or that make up language in general, such as tone, inflection, connotation, and the dynamic between the speaker and the listener. These are allowed to "*interrupt* but not *inform* semantic order."[123]

Stripped down in this way, Nye sees an alarming problem: logic, as a language, invites no response. As she describes throughout her 1990 book *Words of Power*, logic, *qua* language, sets things up in such a way as to allow only for affirmation or denial (of the truth of a sentence, or the validity of an argument) but not for *reply*.[124] The subject matter of a sentence is a technical matter not open for discussion (there is, again, only *one* underlying logical form, *one* logical proposition into which it can be translated); the stakes – truth vs. falsity – have been set to the exclusion of other concerns (social repercussions? political efficacy? the *feeling* of being listened to?); and the speaker, having been abstracted from the model entirely, can no longer be interrogated. Deviating from what has been laid out for consideration shows only weakness of mind, distraction, misunderstanding, naïveté.[125] As a result, Nye finds herself, as a woman and as a feminist, robbed of the very things that would allow her to challenge what she is being told.[126]

In truth, says Nye, "Language cannot be studied outside its social, economic, familial context. It cannot be separated from the historically situated desires and motivations that give it meaning."[127] So long as (we admit) we are talking about real discursive practice, that practice can be

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[123] Nye, "The Voice of the Serpent," 234 (emphasis added).
[124] See also Andrea Nye, "Semantics in a New Key," in *Philosophy in a Feminist Voice* ed. J. Kourany (Princeton: Princeton University Press, 1998), 289.
[125] See Nye's remarks about "Jones ate fish with ice cream and died" in the Introduction to *Words of Power*.
[126] Nye, "Semantics in a New Key," 283.
[127] Nye, "The Voice of the Serpent," 245.

examined, questioned, problematized, analyzed for its vested interests, and evidence can be collected on its complicity with certain ways of seeing things and certain social arrangements.[128] But formal logic is, by its own account, divorced from any particular place and time. It is purely abstract, non-anthropological, a pure, unchanging ideal. Like Irigaray, Nye finds the desire for dominance lurking behind this pretension to neutrality, as a passage of hers on ancient Greek logic illustrates:

> Instead of on brute strength, Hellenic rule would depend upon a superior culture. The medium of that culture was language, but not the diverse demotic Greek spoken by tradespeople, workers, slaves, and women. The language of those in power would be a rational, logical Greek suited for use in law courts, in political debate, and in the decrees of governors. It would be a language which even the non-Greek aristocracy of conquered possessions would be motivated to master in order to get access to power and opportunities for advancement.[129]

Even more insidiously, insofar as logic is an ideal language, it sets the tone for how natural language is perceived. Logic is the source of a miasmic picture of human communication, a reconceptualization of language that makes the role of human speakers (and listeners) disappear and elevates language above our heads, making it autonomous and beyond critique. With the technical conceptualization of language, we have tied our own hands and forfeited the ability to call any language to account.

"The political advantages of such an achievement are obvious,"[130] says Nye. On the view that logic captures what natural language formulations

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[128] The difference between titles for men and women; the fact that, in French, the correct plural pronoun for a group of both men and women is masculine; the words for female heirs, managers, poets being diminutive; the asymmetry in the terminology "widow"/"widower", which tacks an activity-connoting suffix in the male case; the difficulty of writing with gender neutral language and in particular the lack of a gender neutral third person pronoun; the difference in connotation when words are applied to women vs. men ("She's a professional"); the dictionary definition of "man" being "human" and "woman" being "female"... See Dale Spender *Man Made Language* 2nd ed, (New York: Routledge, 1985).

[129] Nye, *Words of Power*, 74.

[130] Nye, "The Voice of the Serpent," 245.

are really driving that, understanding what natural language really says or how it really works becomes a matter that logicians and philosophers of language know best. And discontents are forced into silence – those who do not play by the rules are rejected as speaking nonsense, or of trying to commit logical fallacies (Nye admits her arguments against Frege's logic are *ad hominem*). Unless one plays by the specialized rules, one loses the game before it even begins, by being disqualified from participating at all.

What's more, those rules are opaque, demanding, and unintuitive. Nye makes much of the point that logic – into which all relevant discourse must, at least in principle, be translatable – is simply too specialized and technical a language to be accessible to the common, speaking person. In a very real and tangible sense, the formal language is simply not usable or understandable by most women,[131] most workers, children, the uneducated, the marginalized. It therefore insulates itself from criticism in a *de facto* way by making itself incomprehensible to most potential interlocutors. "Turning back again and again on itself, [this] philosophical theorization becomes increasingly complex and arcane until it is closed to everyone but a few intellectually adroit practitioners who are sufficiently insulated from reality to follow."[132] This brings us to the question of whose interests it represents – since, as Nye maintains, all language is socially locatable and describable. Formal logic is the language of just that "small coterie of experts" who speak it, and they have made the philosophy of language "increasingly technical and professionalized" and deliberately removed any "substantive reference to human experience or human problems."[133]

And so, this technical picture of language is able to survive, and to dominate, says Nye, by making the discipline so abstract, technical, and precise that it is utterly opaque to the outsider; by making it clear over

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[131] Not because they are women, but only for the same reason that most *men* don't understand it either.
[132] Nye, "The Voice of the Serpent," 240.
[133] Nye, "Semantics in a New Key," 269.

and again that questions and comments originating from the real spoken practice of women, workers, slaves, etc., are irrelevant, misguided, at cross-purposes, born only of an ignorance of what is really at stake; and by only having discussion take place within a certain set of inviolable assumptions.

What does Nye propose instead? She insists that, as with all other subjects, discussion on the matter needs to "circulate" – to pass through everyone's hands – in order for it to be held accountable by all those who might have a stake in the theories that emerge. Everyone, in short, needs to have a say. All inquiry has to acknowledge that it is born in, and remains accountable to, the realm of actual human actors and interests; in other words, the realm of the social. Inquiry needs to be honest to itself and to others about its intentions – about what drives it and interests it – and has to self-consciously take place in the public domain, rather than hide in the hallowed halls of academia. A feminist-inspired linguistics would be one that "remain[ed] conscious of and critical of its own motivations and desires."[134] But it too would be subject to all speakers – ordinary speakers – who would ensure that no language ever assumed absolute power, lulling us back into the "fascism" of contemporary formal semantics.[135]

But this seems a bit too cut-and-dried. Can it be that the philosophy of language, or logic, is elitist simply because it is a demanding subject attended to by a select few? And can the problem be solved merely through greater inclusion?

Nye's analysis cuts deeper that this. She is rejecting, first, the logocentric idea of language according to which words name objects directly and thus neutrally. Nye's analysis is somewhat indebted to the structuralist idea that words are not names with necessary connections to objects, but

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[134] Nye, "The Voice of the Serpent," 246.
[135] See the chapter on Frege in Nye, *Words of Power*.

have meaning in virtue of the position they occupy in a language as a whole. They *depend*, for their efficacy, for their meaning, for their function, on other words – in fact, on the rest of the language in its entirety – first, because our recognition of a word depends on its *physical* uniqueness with respect to other words (c*a*t is not c*o*t or b*a*t, etc.); and second, because meaning is always deferred – words can only be explained using other words; nowhere does the linguistic system touch down on "pure", non-linguistic reality itself.

Languages, then, are complex tapestries of our *own* making. This is what it means to say that language is fundamentally social. Nye's objection to logic comes from the fact that the latter is the pinnacle of the logocentric view – it is the logocentric view laid bare. The "refinement" of language into formal logic completes the illusion that language has an essence that is independent of us, so that any problems with it that are social in nature are incidental, and something that we could just pick out – in fact, by turning to a totally neutral, non-connotative language such as formal logic! What logic becomes, in Nye's mind, is the proof that feminists have nothing to say. If we can translate all discourse – even or especially the discourse that feminists have a problem with, such as some scientific language or political arguments – into logic, then it becomes hard to see what feminists are getting at when criticizing language.

Though her point about logic inviting no response is well-taken, Nye's criticisms in general seem overly severe. Even by feminist lights, she has thrown the baby out with the bathwater, refusing to acknowledge anything of value (including for feminists) in the history of mainstream philosophy and eliding tremendous diversity within it.[136] For all of these reasons, Nye does not foresee the possibility of a useful logic, or even the necessity of having a logical system. She objects to logic *as such*, finding in it simply the ultimate expression of desire for discursive mastery over

[136] Antony's, Campbell's, and Nelson and Nelson's development of Quine's ideas were mentioned above. Carroll Guen Hart has used Dewey's ideas to recover a purpose for logic that feminists can support: "'Power in the Service of Love': John Dewey's *Logic* and the Dream of a Common Language," in Falmagne and Hass, 89-115.

the other. But perhaps she has given up too easily. Irigaray, as we noted, does not share her pessimism.

Then again, Irigaray has gone to such lengths to describe women as fundamentally alien in/to existing language, that we may be left wondering how she believes they can engage with it constructively.

Naomi Scheman, drawing upon Wittgenstein, offers an answer.

WITTGENSTEIN AND THE MARGINS OF PRACTICE

Wittgenstein's views about language in the *Philosophical Investigations* are well-known as a departure from his earlier account in the *Tractatus*. The score of the *Investigations* is that no simple picture of what language is or how it functions can adequately capture all that our linguistic practice involves. Wittgenstein is, in a sense, as adamant as Irigaray and Nye that diversity in linguistic practice is ineradicable. He is no longer anxious to explain away or reduce differences between natural languages. Along with this, his ideas about meaning have changed. He no longer sees all languages and all speech within them as answerable to a single set of logico-grammatical rules. Instead, the rules according to which meaningful utterances are constructed are *local*, constituted by the regularities of discursive practice itself – "there is simply what we do". Language, in Wittgenstein's famous analogy, is a game of our own (human) making into which we are initiated, usually as children, and into which we initiate others. Moves, i.e. utterances (sentences, commands, requests, questions, answers, etc.), are licit or illicit according to the rules of the language-game.

Much has been made of what happens to logic in Wittgenstein's system. Now that language is simply what we do, and logic simply a subgroup of moves in the language game, it too is at root a matter of convention.

Dummett[137] and Cavell,[138] among others, have expressed the fear that Wittgenstein's conventionalism vitiates the very sense of "logic" (not to mention mathematics), by making its laws mere stipulations – rules which we *choose* to follow. But O'Neill argues that this line of interpretation misses the mark. The rules that direct our practice are not followed electively; they are constitutive *of* that practice. If one were to disregard a law of logic (should one even be able to do so ingenuously), one would be violating the rules of the language game (or, perhaps, playing a different one altogether). The move would be illicit. The Dummett/Cavell interpretations thus trade on a confusion between rules and their application: "although the rules of grammar (which generate logical necessity) are themselves arbitrary, logical necessities are not arbitrary *within* the conceptual framework of those grammatical rules, and, moreover, we do not *follow* those rules *arbitrarily*."[139] Logic is not grounded in beliefs, but in grammatical convention, which are the very things we use to generate meaningful sentences.

So, Wittgenstein's view of logic is closer to the one we have been using all along than might at first appear. For O'Neill, it would in fact be difficult to see "the hardness of the logical must" in any way other than Wittgenstein's – surely this is much simpler and more persuasive than an "invocation of metaphysics" where necessity "consists in some features of really existent modal realities [i.e. possible worlds], or of Platonist supernatural objects."[140] Where logic is concerned, then, Wittgenstein will tell us that we feel the hardness of the logical must whenever we think about logic, or perhaps even whenever we deliberate on inference-making.

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[137] Michael Dummett, "Wittgenstein's Philosophy of Mathematics," *Philosophical Review* 68 (1959): 324-348.
[138] Stanley Cavell, *The Claim of Reason: Wittgenstein, Skepticism, Morality and Tragedy* (Oxford: Clarendon Press, 1979).
[139] Martin O'Neill, "Explaining 'The Hardness of the Logical Must': Wittgenstein on Grammar, Arbitrariness and Logical Necessity" *Philosophical Investigations* 24 (2001), 21.
[140] O'Neill, 27.

> An *internal* relation obtains between rule and result. This *must* is, therefore, not a causal 'must', but a normative one, given by the rules under which we operate: it is not an empirical matter of fact that the result '25' *must* spring from our attempting to compute 5 x 5, but that, if we do *not* obtain this result, then we are failing to follow the grammatical rules which determine what is *called* 'multiplying'.[141]

However, it *is* true, on the Wittgensteinian view, that alternative grammars are possible. Among different "forms of life," and their different language games, the rules may well be very different. The only constraints on the type of logical system there can be are, roughly, pragmatic ones, in that grammatical systems must be systematic (i.e. followable in a consistent manner), and appropriate to the types of thinking, speaking beings that we are (a colour nomenclature that encompassed millions of different colour words, beyond the number of colour-discriminations that human beings are able to make, would be of no use).[142] But fundamentally, grammar is autonomous from the world (read: not determined by the configuration of states of the world), a fact that is attested to by the diversity of grammatical systems.

Thus, a language game that rejected some tenet of (our) classical logic is not impossible. In fact, this has allegedly been documented among some foreign cultures: the Azande and Nuer peoples of the Sudan seem to use many-valued logic;[143] some Chinese philosophy rejects the law of non-contradiction;[144] and ancient Indian thought viewed negation quite differently.[145] Wittgenstein is clear that other language games, including other logical systems, are not criticizable by our lights. In the first place, because grammatical systems are not true or false, no more than the

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[141] O'Neill, 17-18.
[142] O'Neill describes constraints based on "naturalness" and "usefulness".
[143] See Diederick Raven, "The Enculturation of Logical Practice" *Configurations* 4 (1996): 381-425, where he directs the reader to the literature that has been written on the subject, beginning in 1975 with D. E. Cooper, "Alternative Logic in Primitive Thought," *Man* 10 (1975): 238-256.
[144] See X. Jiang "The Law of Non-Contradiction and Chinese Philosophy" *History and Philosophy of Logic* 13 (1992): 1-14.
[145] See Laurence A. Horn, *A Natural History of Negation* (Chicago: The University of Chicago Press, 1989), chapter 1, § 1.3: "Negation East and West".

rules of a game could be said to be true or false. (Or, to tighten up the analogy: while moves within a game can be licit or illicit, the rules themselves cannot be.)[146] Second, because our respective systems are closed and distinct. Their rules are not our rules, *nor do they mean to be or claim to be*, so moves in their language game cannot be meaningfully criticized by our own standards.

This passage on logic is particularly revealing:

> Whoever calls '~~p = p' (or again '~~p ≡ p') a 'necessary' proposition of logic (not a stipulation about the method of presentation we adopt) also has a tendency to say that the meaning of this proposition proceeds from the meaning of negation. When double negation is used as negation in some dialect, as in 'he found nothing nowhere', we are inclined to say: *really* that would mean that he found something everywhere. Let us consider what this 'really' means.[147]

In trying to criticize other language games, in other words, we conflate what the participants mean with what *we* think they mean (which we view as: what they *really* mean, or what they *should* mean). But let us imagine that the interlocutor in the situation really is trying to convey that did not find anything using precisely the words that he does, and that this would cause no confusion among his fellow language-users. On what basis, other than stubbornness or hubris, could we intervene to change their usage? Were he *meaning* to abide by our rules, we would be able to correct him. But were he not – were he, in fact, applying a different rule for negation (perhaps one that stipulates that "~~p" is equivalent to "~p", or that additional negations amplify or emphasize "~p") – we would have nothing relevant to say.

But feminists clearly want to be able to criticize practice. The very thing that allows Wittgenstein to maintain the hardness of the logical must seems to make it impossible to ever critique grammar, including logic.

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[146] O'Neill, 7.
[147] Ludwig Wittgenstein, *Remarks on the Foundations of Mathematics*, ed. G. H. von Wright, Rush Rhees, and G. E. M. Anscombe, 2nd ed. (Oxford: Blackwell, 1978): Appendix I, § 11.

If, as O'Neill glosses it, the rules that we have are not adopted consciously, but pre-exist anything we might have to say, how can we formulate anything critical of them without being ironic? Actually, if our grammar underwrites our very ability to string together meaningful claims, how can any claim as to its problematicity be articulated at all? We cannot tear the ground out from underneath our own feet. Moreover, given that we cannot criticize other people's practice, since there is only ever local ground to stand on, there does not seem to be *any* vantage from which to launch a critique. In the first case, says Scheman, our critique would inevitably be "self-refuting", while in the second it could only be "referentially off the mark".[148]

But Scheman points out that there is a hidden – and *flawed* – assumption in this picture. It is that the only way of critiquing practice is to elevate ourselves above it – to become independent enough from any particular form of it to be "objective" (detached, disinterested) – then to look back down and judge. On this view, Wittgenstein, who insists that our practice is all there is, appears to have robbed us of that lofty vantage-point.

Indeed he has. But this does not trouble Scheman, in the first place because "the fictive point that serves as the locus of the objective gaze encodes *not* what we all have in common but the interests of privilege that have come spuriously to be *accepted* as universal."[149] Precisely the point Nye and Irigaray want to make about the drive to reduce all language to a single formal semantics.

Second, says Scheman, removing the view-from-nowhere still leaves a place from which to launch a meaningful critique.

> We can come to identify our sense of dis-ease with what we do as calling not for a repudiation of human practice in favour of something independent of it, but for a change in

[148] Naomi Scheman, "Forms of Life: Mapping the Rough Ground," *The Cambridge Companion to Wittgenstein* ed Hans Sluga and David Stern (Cambridge: Cambridge University Press, 1996), 384.
[149] Scheman, 387 (emphasis added).

> that practice, a change that begins with a politically conscious placing of ourselves within, but somewhere on the margins of, a form of life.[150]

Indeed, skeptical of the view-from-nowhere, feminists have found ways of expressing their concerns right from where they stand. Feminist epistemologists have described in detail the experience of being on the margins of practices.[151] By being in the midst of a culture or cultural practice, having to know how to engage in/with it, yet being (sometimes painfully) aware of not being able to fully participate, feminists have found a critical viewpoint from which to expose the ways in which practice is biased or exclusionary. Thus, women who work a paid job, but who cannot leave behind their responsibilities as their children's primary caregiver have an insight into the unstated requirements of what it takes to advance professionally. Women who witness the resources devoted to making air transport safer, but who are vividly aware that the most immediate threats to their safety come from their intimate partners, have an insight into the bias behind the framing of "human security". And for Nye, women, who can think and reason and philosophize, but who aren't at home in the game of trying to silence one's opponent, have an insight into the philosophy of logic.

The margins can be a privileged epistemic vantage point from which to assess cultural practice. The "outsider within" has access to the internal workings of that practice, is able to participate in it and understand it – and yet can also see the ways in which it is limited, problematic, or inaccessible. Those in this position are not *politically* vested in current ways of doing or describing, and so are more receptive to alternatives. Thus what the standard Wittgensteinian analysis leaves out is an acknowledgement of the "diversity in locations *within* and relationships *to* a form of life."[152]

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[150] Scheman.
[151] See especially Patricia Hill Collins, "Reflections on the Outsider Within," *Journal of Career Development* 26 (1999): 85-88.
[152] Scheman, 393 (emphasis added).

It is from the margins that Irigaray and Nye cast their judgements of current philosophy of language. And from the margins, women (and others) can analyze various dimensions of linguistic practice, including logic. In fact, Irigaray's comments on women's position with respect to language fit surprisingly well with Scheman's. Irigaray doesn't believe that there is a separate women's language, but rather different ways of using or inhabiting the language that we have all inherited, perhaps with different ends. She advocates not creating a new language altogether, but disrupting this one – the typical ways in which it is employed, the circumstances where it operates unchallenged, the places where it is used unselfconsciously. Her methodology is to reread the canonical texts of philosophy and to insert question marks, pronouns, responses.[153] From her essay on Descartes:

> Everything can be put in doubt, (it is) I (who) doubt(s), therefore (it is) I (who) am. The relation to the universality of being of the thinking and speaking "I" is then assured. *Undoubtedly*. But he took good care not to suppose, not to presuppose, that some other "I" might be doubting too.[154]

Says Scheman, "sometimes, speaking from the margins, what we want to do is *not* make it work... we want to argue, or show, that the whole apparatus *is* an apparatus, and that it's one we do not have to accept, although the cost of rejecting it may well be unintelligibility, even, perhaps, to ourselves."[155] This explains what to make of Irigaray's zeal for contradiction and disruption. Irigaray is not just a fan of nonsense because she is whimsical. Nonsense is a crucial tool for dislodging the current system. We need to demonstrate its non-*sense*.[156]

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[153] Barbara Godard, "Editorial: Feminism and Semiotics," *The Semiotic Review of Books* 13 (2003), 2.

[154] Luce Irigaray, "...And If, Taking the Eye of a Man Recently Dead,..." in *Speculum of the Other Woman*, trans. Gillian C. Gill, (Ithaca: Cornell University Press, 1985), 181.

[155] Scheman, 398-399 (emphasis added).

[156] We might, at this point, wonder what Wittgenstein himself would have thought of this. Is Irigaray simply taking language on a holiday? Or would he still consider what Irigaray (like other post-structuralist feminist philosophers of language) does with language, as still grounded, still viable? Is it a "better kind of nonsense"?

What does this mean for logic? O'Neill and Scheman have emphasized quite different pictures of how Wittgenstein's "language game" operates. We might think it difficult to bridge the "hardness of the logical must" with the idea that our practice can be changed. If the grammatical rules bind us insofar as we are able to speak at all (or, put another way: if they are what *enable* us to speak at all), how can we possibly question them? The answer is that the margins are, precisely, the vantage from which grammatical practice reveals itself *as practice*. They reveal the arbitrariness of grammar because they are distant enough to create the possibility for discomfort. That discomfort may be ready to be articulated ("I don't see it thus"; "The principle of non-contradiction is a problem"; "This is sexist because..."), or it may just be a feeling of malaise. The latter is arguably far more likely: this is not a ready-made critical position.[157] The discomfort has to be investigated and explored for its critical potential. But the possibilities are rich.[158]

Linguistic practice is challengeable and ideas about language re-evaluable insofar as it is possible to engage with language differently. This diversity exists already, according to Irigaray and Nye. The goal, then, is to make the game of shaping the language game – the "discourse on discourse" – as inclusive as possible. Nye is adamant that discussion has to "circulate". The sheer fact of allowing discussion to pass through diverse hands will make the philosophy of language more accountable (and language itself more inclusive). As Scheman explains, "different perspectives are not simply additive: [they] exist in critical relation to each other... The agreement in judgments Wittgenstein refers to (PI, 242) does the work it does in part because we cannot take it for

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[157] On the idea that the epistemically privileged view of a marginalized person must be developed before it can become a critical one, see Nancy Hartsock, *The Feminist Standpoint Revisited and Other Essays* (Colorado: Westview Press, 1998).

[158] We might draw an analogy to ethics. Moral prescriptions, at a given place and time, are no less real for the ethical relativist. But so can those prescriptions be internally evaluated and criticized, and sometimes, those in the best position to do so are at the margins of the society (e.g. Native Canadians speaking to *real* level of respect granted minorities in the face of what the government or society claims about itself). *Where would women be without this?*

granted."[159] It is only fair to invite everyone to the table, to test whether the conventional wisdom can stand up to real challenge.

Finally, one of the most significant things about both Nye and Irigaray's analyses is their determination that the object is not to settle on a single answer, once and for all. It is crucial to both of them to continue questioning – for there to be no end to this process, in fact; no point at which one system settles in and calcifies. Nye is unequivocal that it is simply not appropriate for human inquiry to ever stop, and that we have to remain self-critical. This means our ideas are likely always going to evolve. There will always be more to say, especially as others find their voices for the first time. Irigaray likewise contends that settling for a single discourse-on-discourse isn't faithful to the reality of discontinuity, variety, irreducibility, incommensurability, spontaneity, subversion, shift. This is a crucial part of their departure from the technical view: Irigaray and Nye dispute the very idea of searching for the *one true theory* of language.[160]

Were we to import this to the discussion on logic, it would go beyond the idea of logical pluralism, i.e. that multiple logical systems can be allowed to co-exist on equal footing, perhaps each meeting different purposes. Nye and Irigaray's analyses would seem to demand that theories of language and formal syntaxes *themselves* have an off-ramp, a thread with which to unravel them and start over. Irigaray envisions feminine speech as that which "disconcerts fidelity to a single discourse." As women, she says, we have no need for a single, authoritative understanding of language. "We are not drawn to dead bodies."[161] Nye, too, stipulates that "no language can have absolute power." What their positions imply would place a demand upon formal systems themselves – requiring that these have an internal ability to acknowledge their own limitations (the oversimplifications they have had to make, what they

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[159] Scheman, 398.
[160] This leaves open two possibilities: first, embracing the idea of shifting sands and multiple theories; or second, viewing the *process* of thinking about language, itself, as effective or therapeutic.
[161] Irigaray, *This Sex Which is Not One*, 215.

have left out, what they do not handle well) and also be willing to cede pride of place to another system when confronted with a linguistic practice that they cannot incorporate. [162]

Scheman gives us not only the possibility of feminists (or *women*) critiquing logic, she gives an impetus for why that should happen: to work past the ways in which expression is politically suppressed and constrained. The ideas elaborated in Chapter 2 have a new relevance: not only it is possible to advance feminist critiques of classical logic in much the same way that those concerned about vagueness or quantum physics have done, but there is now a mandate involved: to be the voice from the margins holding practice in check, pointing out its problems and limitations, querying its pretensions to be all-encompassing. In answer to the question: "Does feminism have anything to say about logic?" an answer: "Yes! Urgently so!"

[162] What would have become of the debate over definite descriptions? Even if the same resolutions had been put forward, perhaps this would have been in a different spirit?

Conclusion

The preceding discussion has covered whether and how feminists, in particular, might criticize classical logic, but along the way it has also presented reasons why the ways in which we think about logic in general can and should be challenged. I was originally driven to explore emerging feminist critiques of logic on the suspicion that the staunch resistance to them says more about the current state of logic than the ability of feminism to articulate something relevant on the topic. What I have found suggests that the reluctance to admit any challenges to the classical system derives from a deeply entrenched idea that what logic *is*, at base, is a collection of ideas that cannot meaningfully be challenged. Given that the laws of logic do not state empirical fact, nothing observable could affect their truth (including actual human patterns of reasoning); and given that they operate upon anything conceptual as much as upon anything real, nothing could really be imagined that could thwart them.

But as we saw, classical logic has been questioned, and alternative systems have been put forward. And quite often, what has started that process has been exposing classical logic to be making claims above and beyond what it is willing to admit (and willing to answer for). Both the feminist and non-feminist critiques surveyed allege that classical logic has implications outside of its own alleged purview – for how language is taken to operate, for how quickly tadpoles become frogs, for how human freedom is perceived, for how difference is understood. What is interesting is that, on the modern conception, logic should *not* be making any substantive claims in these areas. But the claim from Plumwood,

Frye, Irigaray, et al., is that this spill-over is inevitable. We cannot *but* feel the impact of logic when thinking about language or ontology; therefore, logic should be held responsible for what it says in these areas also.

All the more reason why the many choices that have been made on the way to formulating classical logic should be examined in the open. What is significant about feminist critiques of logic is that they expose, on the one hand, what those choices have been (to elevate a certain technical conception of language which disparages feminine speech; to reduce difference to mere reflection); and on the other, they point to the *fact* that logic has a lot more to answer for than originally thought.

When actually expressed, the arguments, often by fiat, that logic is beyond feminist challenge are, in effect, the same sorts of arguments that feminists have always encountered when knocking at the door of some discipline. And they are scarcely more valid here than they have been anywhere else.[163] But in the case of logic, it is arguably that much more critical that open discussion take place. To the extent that we perceive logic to underwrite inquiry (as the laws that prescribe how inference-making should proceed), or language (as a regulative ideal), it is undeniably urgent that its pronouncements be critically reflected upon. As Derrida says, "what is at stake is the very structure of authority itself"[164] – the authority to separate meaning from meaninglessness, the licit from the illicit. Nothing that plays so important a role should operate unchecked.

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[163] Viz., Haack's comments on Nye in the introduction to *Deviant Logic*, where, when refuting Nye, she doesn't even finish her sentence.
[164] Jacques Derrida, *Writing and Difference*, trans. Alan Bass (Chicago: University of Chicago Press, 1980), 48.

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